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VOLUME XXX.

ON

DISEASES OF THE SKIN,

INCLUDING THE

EXANTHEMATA.

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BY

FERDINAND HEBRA, M.D., 1816-80

PROFESSOR FÜR DERMATOLOGIE AN DER UNIVERSITÄT, PRIMARARZT DER ABTHEILUNG FÜR
HAUTKRANKHEITEN IM K. K. ALLG. KRANKENHAUSE IN WIEN, ETC. ETC.

VOL. I.

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AUTHOR'S PREFACE

TO THE

ENGLISH EDITION.

It was with great pleasure that I acceded to the request of the Council of the New Sydenham Society, communicated to me by their courteous Secretary, Mr. Hutchinson, that I would allow my work on 'Diseases of the Skin' (which forms part of Virchow's 'Handbuch der speciellen Pathologie und Therapie') to be translated into the English language. Of the compliment paid to me by the Society in making this request I am the more sensible, because English literature is already by no means poor in treatises upon cutaneous affections. Thus, although, during the last century, this branch of medical science was cultivated with zeal both in Germany and France, it was England, the country of Willan and Bateman, which took the largest share in what may be termed the Reformation of Dermatology.

In fact, not only all later English writers on diseases of the skin, but also those of every other country, have made use of the Classification of Willan in arranging the subdivisions of their own systems, or, indeed, have even adopted this Classification without modification.

Within the last few years, in particular, several English physicians have pursued the study of cutaneous affections, and have succeeded in adding very considerably to the general fund of knowledge in this department of medicine. Among these I must mention especially my talented friend Mr. Erasmus Wilson, as well as Dr. Anthony Todd Thomson and Dr. T. McCall Anderson. The works of these writers, whether systematic treatises, or monographs upon general dermatology, or upon particular diseases of the skin, have rendered them famous throughout the Continent as well as in their own country. I might name many others who have won for themselves a deserved reputation, either by excellent articles in the medical journals (Hutchinson, Addison, Gull), or by the success with which they have devoted themselves to the treatment of cutaneous affections (Startin, Hillier, Tilbury Fox).

I have therefore felt peculiar satisfaction in finding my work on 'Diseases of the Skin' admitted to a place by the side of those English treatises of which I cherish so high an opinion. With reference to Dr. Hilton Fagge's translation, I will only say that I have found reason to express the fullest confidence in his knowledge of the subject, as well as in the zeal with which he has executed the task set before him.

I have also to mention, that there is, in some respects, a greater unity in the translation than in the original German edition. Certain parts which had been written by my colleagues have been entirely rewritten by myself.

Moreover, there are in the original several errors by which the meaning is perverted; all these have been corrected in the present volume. Consequently, many little changes will be found, which are to be regarded as improvements. In fact, in all these points, the English translation is more correct than the German edition of my work.

HEBRA.

VIENNA, *November*, 1866.

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TRANSLATOR'S PREFACE.

In submitting to the Members of the New Sydenham Society a first volume of the translation of the important work of Professor Hebra on 'Diseases of the Skin,' I think it necessary to add a few words to the preface written by the distinguished author.

There will always be a difference of opinion as to the best course to be adopted in translating from one language into another: whether the expressions used in the original should be transplanted, so to speak, into the fresh soil, in the hope that they may still flourish, or whether the object should be to convey the opinions of the author, in the words commonly employed by those who write in the language of the translation. It has been my aim to follow an intermediate course. But, although I believe my translation to be more literal than some which have been placed in the hands of the English Medical Public, I think, in looking over the pages which follow, that I am more likely to be blamed for departing from the exact mode of expression in the German text than for adhering to it too closely.

There are, however, reasons which lead me to believe that a justification may be found for this. Every sheet of the translation has been read over by Professor Hebra, and every passage in which I felt any doubt as to the faithfulness of the translation, or as to the sense of the original, was underlined by me, and has been accepted by him, or corrected so as to convey the right meaning. It is the more necessary to make this remark as there are, at least, one or two instances in which statements are made in the original text, diametrically opposite to what was intended by the author. In these cases, the English edition, of course, differs altogether from the German.

Again, I am convinced that a very literal translation is often really less accurate than a more free one. Words and forms of expression which are commonly used in a language are often introduced loosely and without definite meaning; whereas, when transferred to another language, they convey to the reader ideas of a precise kind which were not at all intended by the original author.

Professor Hebra has mentioned that certain chapters have been rewritten for the English edition of this work. These are Chapters V and VI, "On the Affections of the Glandular Organs of the Skin," and the greater part of Chapter XV, of which Herpes is the subject. Moreover, in the chapters on Morbilli and Scarlatina, certain details as to the internal diseases which occur as complications or sequelæ of these exanthemata have been omitted. These omissions bring the volume back to a size probably nearly equivalent to that of the original, for the chapters rewritten by Professor Hebra occupy a much larger space than those which they have replaced.

It may also be well to remark that the arrangement of the work itself differs from that adopted in the German edition. In the latter, a tabular construction is followed throughout; there are no separate chapters; and headings in small type not rarely correspond to others at intervals of more than a hundred pages. Such a plan would, I think, give an English reader great inconvenience; and, therefore, the present volume has been thrown into chapters; of which one (Chapter VII) is made up of the isolated paragraphs above referred to, all of which are thus collected together. The tabular arrangement of the original is, however, preserved in the Table of Contents.

Mention is made incidentally of a fact which will, I think, be deemed of interest in reference to the writings of Willan. Professor Hebra quotes (vide note, p. 15) from a German translation of a work of Willan's, published at Breslau in 1799. Now, the earliest treatise on diseases of the skin by the great English dermatologist, contained in any of the large medical libraries in London, is the quarto dated 1808; and the only reference I have been able to find to any previous work of his on this subject is the statement that the Fothergillian gold medal had been awarded to him in the year 1790, by the Medical Society of London, for a Classification of Cutaneous Affections. It would, therefore, seem that a publication which was at the time deemed worthy of translation into German has fallen into complete oblivion, having no doubt been eclipsed by the well-known later writings of its author.

In conclusion, I have only to express my great obligations to my friends, Dr. Welch, Dr. Mackenzie Bacon, and Dr. A. B. Shepherd, for having very kindly assisted me in correcting many of the proof-sheets of the present volume.

C. H. F.

TRINITY SQUARE,
SOUTHWARK;
Nov., 1866.

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ON

DISEASES OF THE SKIN.

CHAPTER I.

ON THE GENERAL PATHOLOGY AND SYMPTOMATOLOGY OF CUTANEOUS DISEASES.

The integument, as an integral part of the organism, is liable to no other morbid processes than those to which the other organs of the human body are subject. Thus, there are diseases of the skin, which are caused by hyperæmia, anæmia, exudation, and hæmorrhage; and we also meet with neuroses of the skin, and find it presenting new growths, or affected by hypertrophy or atrophy. The anatomical conditions and the superficial position of the skin, as well as the extent of its surface do indeed in some degree modify its diseases. But of the peculiar forms thus produced, some, such as the ulcerative processes, and the parasitic growths, occur also in analogous tissues, such as the mucous membranes. And the remaining differences concern chiefly the etiology and symptomatology of cutaneous affections, and do not consist in any essential peculiarity in the nature of the disease.

What however is altogether special to affections of the skin, is their *symptomatology*, that is to say, the nature of the appearances by which the various pathological processes manifest themselves to our senses.

On a general survey of these appearances, it is impossible to overlook the fact that the dermatonoses present a certain uniformity in their configuration, and that they have also a definite mode of development, and of retrogression. And this leads directly to the conclusion, that the determining agent in the production of the *symptoms* of cutaneous disease, is not so much the general pathological process, as the local disturbance to which it gives rise. In other words, the cause of the peculiar appearances met with in the dermatonoses, lies in the change which these diseases produce in the organs which make up the skin. For example, pustules, which do not essentially differ in form, are caused by the variolous process and by scabies, as well as by tartar emetic ointment, and by mere mechanical friction. Vesicles appear in the train of certain general diseases, which resemble perfectly those produced by the inunction of croton oil. Again, precisely similar deposits of pigment are produced by external irritants, and by affections of the internal organs. And thus, from any individual appearance, we can seldom infer the cause of the disease. We have always to pass in review the whole of the symptoms, which belong to each cutaneous affection.

And yet it is indispensable to have an accúrate acquaintance with each of the appearances caused in the skin by the various morbid processes to which it is liable; and it is necessary not only to know their *original form,* but also to be familiar with the further changes which they undergo, with their mode of [1]involution, and with their pathological anatomy.

Under the term *Efflorescentiæ cutaneæ* (Hautblüthen, Efflorescenzen, eruptions), it is usual to group together many of the symptoms of cutaneous disease, which differ altogether from other pathological appearances, in their determinate form, their position, and their course, as well as in the regularity of their development and retrogression. And it is the practice to give certain special names to the various forms of efflorescence, which are distinguished by characters of their own.

Now we have no intention of disturbing the established terminology and definitions of these different forms of efflorescence. On the contrary, we hold that designations once adopted should always remain fixed, and should be closely adhered to. But we shall also carefully avoid all unnecessary and too refined distinctions, specifying those differences only, which are of an essential kind.

Some of the appearances observed in cutaneous diseases are caused directly by the deposition of morbid products in the skin. These bear the name of *Primary symptoms* or eruptions, *Efflorescentiæ cutaneæ primariæ*. But these eruptions often afterwards undergo further development, and are subject to changes of a vital, chemical, or mechanical kind. To the appearances thus produced we apply the name of *Secondary symptoms*.

---

[1] The term *involution* is employed in this and other works to indicate that stage of a disease, which succeeds the full development of the pathological change, and during which the restoration of the normal condition of the part is going on. Thus, in variola, it is applied to that period which follows the complete formation of the pustules, and in which these become converted into crusts.—[ED.]

Under the first head, we include (1.) the spot or macule—*Macula* (Fleck). (2.) The papule—*Papula* (Knötchen). (3.) The tubercle—*Nodus* seu *Tuberculum* (Knoten). (4.) The tumour—*Phyma* (Knollen). (5.) The wheal—*Pomphus* seu *Urtica* (Quaddel). (6.) The vesicle—*Vesicula* (Bläschen). (7.) The bleb—*Bulla* (Blase); and (8.) the pustule—*Pustula* (Eiterblase).

Among the secondary appearances we enumerate—(1.) The excoriation—*Excoriatio* (Hautabschürfung). (2.) The ulcer—*ulcus* (Geschwür). (3.) The fissure—*Rhagades* (Schrunde). (4.) The scale—*Squama* (Schuppe). (5.) The crust—*Crusta* (Kruste). (6.) The lamellated crust—*Crusta Lamellosa* (Schuppengrind); and (7.) the cicatrix—*Cicatrix* (Narbe).

I.—*Primary symptoms or forms of Efflorescence.*

(1.) The macule or spot (*Macula*, Fleck, Kelis, Tache) includes every change in the normal colour of the skin, arising from disease, and not uniformly distributed over the whole surface of the body. When the skin is universally affected, we employ the term *discoloration, Decoloratio, Dyschromasia*—(Missfärbung).

The colour of maculæ is either one of the various shades of red, or white, grey, yellow, green, blue, brown or black. They may either be punctiform, or may vary in size from that of a lentil to that of a bean, of a finger-nail, of a fourpenny or sixpenny-piece, a half-crown, the palm of the hand, &c. In form, they may be divided into round, oval, elongated, circinate, and serpentine.

Their seat is sometimes in the vessels which supply the papillæ of the cutis, sometimes in the pigmentary layer of the cuticle.

Various morbid processes may be concerned in the formation of maculæ. They may arise either from simple hyperæmia, or from exudation into the tissue of the cutis, without elevation of its surface, or from hæmorrhage and its results, or, lastly, from anomalies of pigmentation.

All these changes in the normal colour of the skin bear the general name of maculæ; but we have for some forms of them special denominations. Thus the term *Roseola* (Röschen) is applied to red spots, of a round, oval, or elongated form, in size between that of a lentil and that of a finger-nail, when the redness disappears beneath the pressure of the finger. On the other hand, when the redness does not so disappear, the name *Purpura* is used; and this is again subdivided according as the maculæ are large or small, or simply punctiform—*Petechiæ*, or in the form of striæ—*Vibices*, or occupying large tracts of skin—*Ecchymosis*. Again, rashes which cover, uninterruptedly, portions of the integument as large as the palm of the hand, or larger, and which disappear beneath the pressure of the finger, are called [1]*Erythemata* (Erytheme).

Those blushes which surround the periphery of other eruptions receive the name *Areola* or *Halo* (Hof.).

Flat Teleangiectases, the so-called Nævi vasculares, also form red spots; but these are readily distinguished from *Roseola*, *Erythema*, or *Purpura*, by the presence of the distended varicose vessels which cause the disease, and which are generally visible with the naked eye. Moreover, in these affections it requires the application of a more severe and continued pressure, to make the redness even for a short time disappear.

White spots, produced by deficiency of pigment, and varying in size from that of a lentil to that of the palm of the hand, or even occupying the whole surface, are called *Achroma*, *Vitiligo* (alba levior) if acquired; *Leucopathia*, *Albinismus*, if congenital. Darker patches caused by increased deposit of pigment may be observed at the circumference of these white patches. The openings of the hair-sacs are also seen on them unaltered; and the growth of the hairs which are themselves mostly white, remains unaffected. These characters enable these affections to be readily distinguished from flat cicatrices.

---

[1] Although we find these terms applied throughout dermatological works in pretty strict conformity with their definitions, yet it must be admitted that some names are met with, which do not answer to the rules we have laid down. We have examples of this in the *Roseola rheumatica* (a red rash, which takes the form of maculæ, but which does *not* disappear on pressure, and, as is well known, is caused by hæmorrhage), and in the *Erythema papulatum*, *tuberculatum*, *annulare*, *iris*, *gyratum*, *nodosum*, &c., (forms of efflorescence, having a red colour and a raised surface, varying in size between that of a pea and that of a hen's egg, of an annular shape, or resembling papules, tubercles, &c.). However, the introduction of a scientific terminology in the study of cutaneous disease, will probably be the work of the immediate future. I shall at least attempt to prepare the path towards its accomplishment.

Brown or black spots, produced by excessive deposit of pigment, have various names. (1.) *Chloasmata* (Pigment, Mother, or Liver[1]-spots). These cover spaces as large as a half-crown-piece, or as the palm of the hand, or are even larger still. They are met with on the face, particularly on the forehead, and also on the trunk, and on the extremities, and they do not desquamate. (2.) *Lentigines* or *Ephelides*—[2]Sun spots (Linsenflecke, Sommersprossen). These are yellow or brown spots, of the size of a lentil, which are found in large numbers on the face and limbs. (3.) Pigment marks—[3]*Nævus Spilus* (Pigmentmaale). These are brown or black spots, generally round, scarcely or not at all elevated, and of the size of a lentil or of a fourpenny-piece. They are generally solitary, and occur chiefly on the face, back, and extremities.

Yellow, blue, and green discolorations of the surface are observed during the involution of hæmorrhagic spots; they are always confined to the seat of the original hæmorrhage, and may be easily recognised by the fact, that the colour is not the same over the whole of the spot. On the contrary, they have a marbled appearance, and generally display at the same time all the three colours which we have named.

Spots, which are simply blue, and present no other colour as well, are, if they disappear on pressure, the result of passive congestion, or blood-stasis, and occur chiefly at the distal parts of the body, such as the face, the hands or the feet, in cases of defective circulation. •

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[1] The name Liver-spots (Leberflecke) led to, or arose from, the erroneous opinion that they were caused by hepatic diseases. For this idea there is no foundation whatever. Disease of the liver, such as atrophy, may cause deposits of bile-pigment in the skin; but this produces a yellow or brown discoloration of the whole surface of the body.

[2] Here, also, we meet with a mistake which is very widely diffused, the notion that these pigment-spots are due to the influence of the sun's rays. Careful observation, however, teaches us that this is not the case. The proof of this statement we shall furnish hereafter.

[3] If the term Nævus—mother's mark, answers to a congenital modification of the colour of certain parts of the skin, it is not strictly applicable to the appearance which we are now describing; for these spots are very rarely seen in infants, and almost always show themselves first during adult life. In our Lying-in hospital, in which there are more than 7000 births every year, there is abundant opportunity to convince one's self of this fact.

A black colour affecting parts of the skin—*Nigrities partialis, Pannus melaneus*—is met with on the face, on the areolæ of the breasts, and over the linea alba of pregnant women, and also in the scrotum of men, where it is a local change.

Discolorations—*Decolorationes, Dyschromasiæ* (Missfärbungen), that is to say, more or less uniform alterations in the colour of the whole surface, present various appearances. There is the pale, waxy, death-like hue (Todtenfarbe) which is seen in chlorosis, in anæmia, and in the different cachexiæ. There is the yellow, green, brown, grey, or even black colour, which is due to the deposit of pigment in the skin—of biliary colouring matter in jaundice, of nitrate of silver in argyria, of an excess of the normal cutaneous pigment in melasma. And lastly, there is the more or less deep blue or bluish-black tint, which is produced by disturbance of the circulation, as in the so-called cyanosis or morbus cæruleus.

Maculæ vary in the course which they run, and in the duration of their existence. The spots of roseola or of erythema always quickly disappear, and either leave no trace of their presence, or are followed by desquamation and deposit of pigment in the parts which were before reddened. On the other hand, spots caused by teleangiectasis are almost always permanent, and at most vary only in the depth of their red colour, and in its tint. So again the white, brown, and black maculæ, which arise from deficiency or excess of pigment, very seldom undergo changes of hue, though they may spread over a larger surface. The yellow, blue, and green discolorations, which are the result of hæmorrhage, have generally a duration of from one to three weeks, according to the quantity of extravasated blood. During this time they present several changes of colour, so that, from being at first bluish-red they become blue or bluish-black, then greenish-yellow, and finally quite yellow. The blue, or cyanotic colorations, correspond in duration to the causes which produce them; and when these are removed, vanish completely without leaving behind them any indication of their presence. This is true also of the other forms of general discoloration of the skin.

(2.) The papule or pimple (*Papula*, Knötchen, Blätterchen). These names are applied to any morbid change in the skin, which forms a solid projection above the surface, in size between a millet-seed and a lentil, and containing within it no fluid, so far as can be seen with the naked eye.

Their colour may be that of the healthy skin, or may be of any shade of red. Papules may also be white, brown, or black, or of a livid hue.

Their magnitude varies from that of a millet-seed—*Milium, Papulæ miliares, miliformes,* to that of a lentil—*Lenticula—Papulæ lenticulares.* Moreover, pins-heads and hemp-seeds may also be made use of as comparative terms to indicate more accurately their size.

In form they are distinguished as pointed, *Papulæ acutæ*—as flat, *P. planæ*—conical, *P. conicæ*—semi-globular, *P. globosæ.*

Papular eruptions are seated sometimes in the papillæ of the cutis; sometimes in the deeper layers of the epidermis; sometimes, and indeed most frequently, in the follicular apparatus of the skin. Thus, in one instance, they are due to the enlargement of already existing papillæ, or to the formation of new ones. In another case, they are produced by exudation into the rete mucosum, or by extravasation of blood into the same tissue. In other instances again, it is a sebaceous gland, which, having undergone degeneration, or having become distended by its secretion, causes an elevation above the surface of the skin. Lastly, and this is the most common case—the hair-sac, or rather the margin of the canal in which the hair is lodged, is the special seat of the papule. It is easy to convince one's self of this, either by observing cases of cutaneous disease with the naked eye, or by examining papules with the magnifying glass, and, after their removal, with the microscope.[1]

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[1] My view with reference to the mode of origin of those papules (and vesicles) which are seated at the entrance of a hair-sac, is as follows. As is well known, the whole sac is filled with epidermis (the so-called root-sheath) so completely. that there is no free space between the hair and the wall of the follicle. This part of the epidermis which is thus formed within the follicle and fills it, is uninterruptedly continuous with the external cuticle, which arises from, and covers the adjacent papillæ. Now when the vessels which supply the sebaceous glands or the papilla of the hair, pour a drop of exudation into the interior of the follicle, this must of course infiltrate the epidermic cells which occupy that position. It is not, however, retained by them, but is transmitted in the direction determined by the mode of nutrition (in der durch den Stoffwechsel gegeben Richtung), that is to say, outwards to the cells immediately contiguous. This process is repeated, till at last the drop of exuded matter, or the secreted fluid, reaches the horny layer of the cuticle. This resists its pressure, and prevents the further progress of the fluid, for its cells have less power of imbibition. Hence it becomes pushed forwards above the level of the sur-

The pathological processes, by which papules arise, may be reduced to the following—

(*a*) Abnormal growth and accumulation of epidermis round the entrances of the hair-sacs. The tubular sheaths of epidermis (root-sheaths) which surround the hairs, and which normally become imperceptibly detached, are under abnormal conditions retained at the entrances of the sacs. This occurs first with the innermost stratum, which is in immediate contact with the hair; the next layer is then added; and so on, till a cone of epidermis is formed, consisting of concentric rings, and either perforated by a hair in the centre, or having underneath it a more or less spirally rolled-up hair, which cannot make its escape. This forms the *Lichen pilaris* of Willan.

(*b*) Excessive secretion of hard and altered sebum, which fills and distends the duct of the gland or of the hair-sac, and pushes before it the lamina of epidermis, which covers the duct. Thus are produced the so-called white Comedones.

(*c*) Degeneration of the sebaceous gland, and conversion of it into a white, globular, solid body, the size of a millet-seed. This occurs in adults on the eyelids, and in the skin of the penis and scrotum, and is termed Grutum or Milium. As observed in children, it received from Willan the names *Strophulus albidus* and *S. candidus*.

(*d*) Hæmorrhage into the rete mucosum. The blood exudes in the form of drops, which coagulate and push forward the horny layers of the epidermis, and so produce papules. This affection is the *Lichen lividus* of Willan.

(*e*) Exudations either upon the surface of the papillæ, or into the follicles in the way already described in the foot note to page 7.

(*f*) Hypertrophy of pre-existing sensory papillæ, as, for example, in ichthyosis.

(*g*) Growth of new papillæ, resembling those of the healthy skin; but larger, and generally pointed in form. These are met with in condylomata, in frambœsia, &c.

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rounding skin; and thus a little projection is formed which encircles the hair, and is, in fact, a *papule*. If the process of exudation has now ceased, nothing more occurs beyond the formation of the papule; and this quickly disappears, for the fluid exuded either evaporates or is absorbed, and the lamina of epidermis which formed its roof, separates as a furfuraceous scale. If, however, the process goes a step further, and several drops of exudation are poured into the follicle, the fluid gradually becomes visible beneath the epidermis, and thus that form of eruption is produced, which goes by the name of the *vesicle*.

(*h*) Spasmodic contraction of the cutis (whether due to the action of the organic muscular fibres which have been discovered in its substance, or to a contractility inherent in the connective tissue), by which the loosely-imbedded hair-sacs, with their ducts, are raised above the level of the surface. It is in this way that those papules are produced, which are of the normal colour of the skin, and which form the condition known as the *Cutis anserina* (Gänsehaut goose-skin.)

Note.—According to the nomenclature introduced by Willan, all cutaneous diseases caused by the formation of *coloured* papules, and occurring in adults, are placed under the head *Lichen.* All papular eruptions which appear in children bear the general name of *Strophulus:*—and papules which have the same colour as the rest of the skin, are the distinguishing mark of a *Prurigo.* This nomenclature may appear simple and judicious; but the presence of papules, and the peculiarities in their form and colour, cannot be applied as indications sufficient in themselves for the diagnosis of a disease. For the determination of a cutaneous affection, its general appearance (das Gesammtbild) is just as important as for the recognition of any other internal or external malady. Moreover, as the symptoms manifest themselves not at once, but in succession, and in a definite order of development, it is necessary for the establishment of the diagnosis of a disease that its whole course should be observed. Although, therefore, we adopt the nomenclature of Willan for diseases of the skin, yet we employ it only to denote their *form.* So long for instance, as we regard a papular affection merely as a *symptom,* we give it the name of Lichen; but if we wish to indicate any particular papular eruption, it is necessary to associate with the name of Lichen, an epithet defining it more narrowly.

The duration and the course of papules vary with the pathological processes to which they owe their origin. Thus those which are caused by exudation into the follicles exist as papules for a very short time only (from two to four days). For if the exudation continues, they pass into vesicles or pustules, or even into tubercles. On the other hand, if they undergo involution, they gradually subside, their fluid contents disappearing by absorption or evaporation; and a little discoid lamina of epidermis, which previously formed their roof, remains as the only indication of their position. This afterwards becomes detached as a scale. The skin beneath is then left of a normal colour, or slightly darkened by pigment; and the

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entrance of the hair-sac, which is again pervious, is plainly visible. Those papules which are caused by hæmorrhage have a longer duration; and those which are due to an accumulation of sebum, or to degeneration of the sebaceous glands, remain longer still. Lastly, papules which are produced by hypertrophy of the cutaneous papillæ, or by a new growth of similar structures, are altogether permanent.

Remark.—A morbid appearance, which has received the name of the *Stigma* or *Umbo* (Stippe, Punkt) is to be regarded as arising from the union of the two forms of efflorescence which we have been describing. It is a round, circumscribed red spot, not larger than a fourpenny-piece, which has in its centre a minute papule. Its origin may be thus explained. The papule is caused by swelling of the entrance of a hair-sac, in the way already described; and the surrounding halo is produced by congestion of the vessels which supply the corresponding sebaceous glands. The stigma is always an ephemeral, and never a permanent appearance: and it usually precedes the formation of papules, vesicles, or pustules, as is the case, for instance, in variola.

(3.) The tubercle (*Tuberculum*, *Nodus*, Knoten, Hübelchen) is any solid swelling of the skin caused by disease, which contains no fluid, is as large as a lentil, bean, or hazel-nut, and is covered with epidermis.

In colour tubercles correspond perfectly to papules; for they may be of the various shades of red, of the normal tint of the skin, of a livid hue, or white, brown, or black.

In magnitude they are distinguished, as mentioned above, according as they are of the size of lentils, of beans, or of hazel-nuts. Their greater size constitutes the chief difference between them and papules.

Their form is sometimes semi-globular, sometimes conical. They may also be either pointed at the summit, or flattened, in which case they may be said to be cylindrical.

The same structures of the skin, which are the seat of papules, are also concerned in the formation of tubercles. The pathological processes are also the same, with the exception of the spasmodic contraction of the skin (described under the heading *h*). The difference consists simply in the fact that it is not one hair-sac only, but several adjacent ones, which are affected simultaneously; or that not one sebaceous gland only, but a whole group of them, undergoes degeneration; or that the quantity of exudation poured into a hair-sac, or into a sebaceous gland, or of blood effused into the same parts, or of accumulated sebum, is so great that the appearance which is produced is larger, and is therefore termed tubercular. The same thing applies to the hypertrophies and to the new growths, only that here still larger tracts of skin are attacked, and that, in consequence, the resulting affection is also still more extensive.

The changes to which tubercles are liable are various. They may undergo complete involution, their contents being absorbed, and their covering of epidermis peeling off. They may become indurated by organization, desiccation, or calcification of their substance; they may soften and suppurate. Corresponding to these changes, the duration of tubercles is also variable; but it is in any case much longer than that of papules.

(4.) Wheals (*Pomphi, Urticæ,* Quaddeln) are solid forms of eruption, which are but slightly raised above the surface of the skin, and of which the superficial area greatly exceeds the thickness.

Their tint is generally red, pale red, or bluish-red. Wheals may also be of a somewhat paler colour than the healthy skin; and in this case they are usually surrounded by a red ring.

The size of individual wheals seldom exceeds that of the thumbnail, and they are for the most part still smaller; but by the fusion of several which lie close together they may become bigger than the palm of the hand.

With reference to their form, it may be observed that each wheal generally resembles a segment of a sphere; but they are sometimes flat; and they may be circinate, or may present the appearance of stripes, or have various serpentine forms.

The superficial layers of the cutis, and particularly the papillary region, and the tissues immediately adjacent to the follicles, as well as the rete mucosum, are the seat of wheals.

Among the pathological processes by which they are produced, the most important are exudations either into the cellular layers[1] surrounding the glands, or into the superficial strata of the cutis generally. Moreover, hæmorrhages, if very superficial and in large quantity, may give rise to the formation of wheals, and some maintain also that they may be caused by spasms of the dermic structures.

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[1] "If the congestion is associated with increased exudation into the cellular layers surrounding the glands, by which these are brought into a state of turgescence, a wheal is the result." Rosenbaum, 'Zur Geschichte und Kritik der Lehre von den Hautkrankheiten.' Halle: 1844, p. 78.

It is a peculiarity of these forms of efflorescence that they are not liable to any further metamorphosis, and that they therefore have but a short duration, and disappear without being followed even by desquamation.

(5.) The tumour (*Phyma,* Knollen). This term is applied to solid swellings, in size between a walnut and a man's fist, which are covered with epidermis, and have their seat in the deeper layers of the integument.

Their colour generally resembles that of the rest of the skin; but they may also be red or brown. To indicate the size of a tumour, it is compared to a walnut, to the egg of a pigeon, hen, or goose, or to a child's or man's fist.

In form they are, for the most part, semi-globular or conical. But tumours which are globular and pedunculated, or cylindrical and flattened, are also occasionally seen. The cutis and the subcutaneous connective-tissue, and the sebaceous glands, are the seat of these affections.

The pathological processes of which these tumours are the products are the following:—Accumulations of sebum in very distended sebaceous glands (*Tumores cystici*); degeneration of these glands (*Molluscum contagiosum*), with massive exudations and extravasations into the corium and the sub-cutaneous tissue; and, lastly, new growths formed within the substance of the integument. Upon the nature of these processes depend both the duration of these tumours and the further changes which they undergo.

(6.) Vesicles (*Vesiculæ,* Bläschen) are elevations of the horny layer of the epidermis by transparent or milky fluid. In size they correspond to papules.

Their colour depends on that of their contents, and of their base. The former may be limpid or turbid, like whey, or mixed with blood. The base, again, may be of a red or of a black colour. It is, therefore, evident that the vesicles themselves may also present these tints. The further examination of the fluid which they contain shows that it has a neutral or alkaline reaction, and that it consists of a blastema containing pus cells in small numbers.

An essential characteristic of the vesicle is its size; for only those elevations of the epidermis, which are in size between a lentil and a millet-seed, hemp-seed, or pin's-head, receive this appellation. All those which are larger are reckoned as Bullæ.

With reference to the form of vesicles the distinction is especially to be noticed, that on the summit of some of them is to be found a small depression, concave towards the surface, and forming a little saucer-shaped pit, which is called the umbilicus (Delle).[1]

Most vesicles have more or less the form of a segment of a sphere (*Vesiculæ globosæ*): but mention is also made of some which are conical (*Vesiculæ conicæ*).

Their seat is in the epidermis, between its mucous and horny layers; and they are found both at the apertures of the hair-sacs, and in the interfollicular spaces. That the spiral ducts of the sweat glands may also be the seat of vesicles (as is maintained by Rosenbaum), can be demonstrated neither on the living subject nor on the dead body; neither by observation with the naked eye, nor by microscopical investigation.

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[1] As to the mode of origin of this appearance, authors are of different opinions. Some, and among them Eichhorn and Rokitansky, think that the umbilicus arises from the falling in of the centre of the vesicle, and its adhesion to the cutis. Others maintain that the desiccation of the contents of the vesicle beginning at its centre, causes it to shrink and to become depressed at that point. Both these views are contradicted by the simple observation, that the formation of the umbilicus begins even during the development of the papule, and that it only lasts till the moment when the whole of the fluid within the vesicle has become yellow and purulent. Moreover, the umbilicus exists only in those vesicles developed from papules, which occupy parts of the surface in which hair-sacs are found; and whether it belongs to a papule or a vesicle, it may be seen to be perforated in the centre by one or more hairs, particularly when it first makes its appearance.

My own opinion as to the mode of origin of the umbilicus, agrees perfectly with that expressed by G. Simon ('Hautkrankheiten durch anatomische Untersuchungen erläutert,' Berlin, 1851, pp. 97, 102, 131). I regard it, in fact, as a direct consequence of the mode of formation of the vesicle, which I explained when speaking of the papule.

The umbilicus is then for the most part caused by the circumstance, that the exudation which generates a papule or vesicle, and which introduces itself between the layers of the epidermis, cannot raise the cuticle so easily where this is continuous with the root-sheath of the hair, as at those points where this is not the case.

Thus the formation of an umbilicus is the *necessary consequence* of the change in the margin of the hair-sac, which results from the development of a papule or a vesicle. The absence of an umbilicus, therefore, is a proof that the eruption does not consist in a metamorphosis of the canals leading from the hair-sacs, but has its seat in some other part of the integument.

An apparent umbilicus may indeed also arise by the circular arrangement of an efflorescence round a central point, which is healthy, and presents no eruption; but such a central depression has a very different proportionate size (as compared with the raised efflorescence) from that which we find in the case of the true umbilicus. This last is never more than a small point; but the false umbilicus may be as large as a millet-seed, or even as a lentil.

In regard to the pathological processes which are concerned in the formation of vesicles, we find that these are almost exclusively of an exudative kind. Hypersecretion of sebum may, however, give rise to an eruption which has a vesicular form, but which mostly contains a milky fluid.

The existence of vesicles in an unaltered state is never of long duration. Either the membrane bursts and allows the contents to escape, or the fluid disappears by absorption or desiccation, leaving behind it the empty skin in the form of a scale; or, lastly, the number of pus cells in the limpid fluid increases, its colour changes, it becomes yellow, puriform, viscid: and so the vesicle is converted into a pustule.

(7.) Blebs (*Bullæ*. Blasen) are distinguished from vesicles simply by their magnitude. The line of separation is quite arbitrary, and is generally drawn by comparing the bulla to the tubercle in size. Thus, the definition of it will be that it is an elevation of the epidermis, in size between a lentil and a goose's egg, containing in its interior a transparent, or a yellow and purulent fluid.

As to their colour, what has been said of vesicles applies also to bullæ, with this difference, that more importance is attached to the colour and nature of the contained fluid in defining the vesicle than in the case of the bleb. Thus, a large bulla may be filled with yellow purulent fluid, without being termed a pustule, which would be the name given to a vesicle under similar circumstances.

Again, bloody serum is more frequently found in bullæ than in vesicles. But blood by itself, without admixture with serosity or pus, forms not bullæ, but dark-red or black tumours (Knollen); for it never remains fluid when extravasated beneath such a covering of epidermis, but always coagulates.

The contents of bullæ have the same microscopical characters as those of vesicles, so long as the fluid is transparent. The chemical reaction also is always feebly alkaline or neutral, and never acid. A considerable quantity of albumen is present, especially in the larger bullæ; and sometimes the fluid also contains urea and uric acid.

On the other hand, the size and form of bullæ are subject to much more considerable variations than are those of vesicles. Thus we meet with blebs of the size of lentils, beans, hazelnuts, or walnuts; or they may be as large as the eggs of pigeons, hens, or geese, or may even attain the size of the fist or the palm of the hand. We find them semiglobular, or almost globular, and also conical; distended or flaccid (matsch); with a circular or oval circumference and base; and lastly, polygonal, indented, tailed, circinate or half-circinate. Moreover, in describing bullæ, it must not be overlooked that some of them are surrounded by a red border (*Areola*, Hof.), which in other instances is wanting.

In reference to their position and mode of development, it is to be remarked that they are seated in the epidermis, between its horny and mucous layers. They generally arise by the enlargement and blending together of several vesicles placed near one another. In their duration, and in the changes to which they are liable, bullæ correspond exactly to vesicles.

(8.) Pustules (*Pustulæ*, Pusteln)—"Vesicula, quæ pus fert, est pustula," was the definition given to this form of eruption by our forefathers. Thus, the purulent yellow character of the contents of an elevation of the cuticle distinguishes a pustule from a vesicle. At the present day we read as the definition of a pustule that it is a small abscess, covered only by epidermis; and both this statement and the former one are equally correct.

A straw-colour is the fundamental tint of pustules, for the purulent fluid which they contain is a condition, *sine quâ non*, of their existence; but the pus may be mixed with more or less blood or sebum, which causes them to appear in the one case of a darker, in the other of a paler, yellow colour.

Varieties in their size and form gave Willan, as is well known, occasion to describe several kinds of pustules. At the present day one is not inclined to attach any great importance to these distinctions; but I think it well to introduce them here for this reason, that one can by these special denominations most simply indicate the size of a pustule in any particular case. Omitting the Phlyctis,[1] which must be referred to the vesicles, there remain three forms of pustules, namely, the Achor, the Psydracium, and the Phlyzacium.

By the achor is understood a round pustule, the size of a millet-seed, scarcely or not at all elevated above the surface, and generally perforated by a hair. It is observed chiefly on the hairy scalp and on the face. By drying-up of the pus contained in it, there is generally produced a rough, granular, honey-coloured crust, of which the peculiar appearance is probably due to the admixture of sebum with the pus. Willan introduces the Favus or Cerion as a species of this affection, starting from the notion that the Favus (Tinea favosa seu lupinosa) arises from the desiccation of this kind of pustule. This however, as is well-known, is not the case.

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[1] 'Die Hautkrankheiten und ihre Behandlung systematisch beschrieben,' von Robert Willan, &c.; aus dem Englischen, von Fr. G. Friese, p. 10, Breslau, 1799.

In the English work 'On Cutaneous Diseases' (vol. i, Introduction, p. 13), Willan mentions the Phlyzacium, the Psydracium, the Achor, and the Cerion, or Favus, but not the Phlyctis.—[Ed.]

The psydraceous pustule frequently begins as an achor, but when fully developed, is of greater size and contains a larger quantity of pus. Its margin is not circular, and is surrounded with a red areola. It dries up into crusts which have a more or less green colour. It is met with chiefly on the limbs.

The term phlyzacium is applied to pustules which are of at least the size of a pea, and which are semi-globular, and therefore have a circular base. They are filled with pus mixed with more or less blood, form brown or black crusts, and, like the psydracium, occur only on the limbs.

With reference to the umbilicus, it may be remarked that in each of these forms this central depression is present only at the commencement of the pustule, and always disappears during the course of its development. For as the quantity of the contained fluid increases, the roof of the pustule becomes stretched; and thus the processes of epidermis by which the umbilicus is formed, and which are connected with the rootsheath of the hair, become softened and broken down.

Besides these forms which have received names, pustules offer many other varieties. Thus when they are developed from other kinds of eruptions, such as papules or tubercles, their base presents a more or less hard, red infiltration, which was termed by Fuchs, a fleshy pericarpium (Fleischiges pericarpium).

The seat of pustules is of course always beneath the horny layer of the cuticle; but with regard to their being superficial to the corium, or more deeply situated within it, many differences prevail. It must not however be overlooked, that those which are developed from papules or vesicles, will naturally occupy the same position as the eruptions which preceded their formation.

The pathological process, which produces pustules can essentially be no other than that of suppuration. The elements of pus (elementary granules, nuclei, and nucleated cells), in fact, develope themselves in those exudations which lie beneath, and are covered only by, the epidermis, just as they do in other exudations, wherever they may be deposited. And this applies equally whether they showed themselves at first as points (Stippen), or as papules, tubercles, tumours (Knollen), vesicles, or blebs. Thus then pustules are among the forms of efflorescence, which for the most part arise from pre-existing eruptions of a different character, and they therefore do not strictly deserve the name of primary symptoms, of which the distinguishing mark is that they are caused directly by the original morbid products. As, however, the exudation which precedes the occurrence of suppuration beneath the epidermis frequently escapes notice till it becomes converted into pus and thus betrays its presence by its yellow colour, it often happens that pustules are the first perceptible morbid appearance, and hence one cannot help admitting them among the primary affections.

II.—*Secondary Symptoms or Forms of Efflorescence.*

As has been already stated, we understand by this term (Secundäre Krankheitserscheinungen) those pathological appearances which are generated in the tegumentary tissues, not as a direct result of the disease, but by the metamorphosis, the softening, or the desiccation, by the breaking down, the fissuring, or the ulceration, or again by the organization of the morbid products deposited in the skin. The following are the appearances which fall under this head.

(1) The excoriation (*Excoriatio,* Hautabschürfung, Oberhautabschürfung) presents the following characters, which also distinguish it from the ulcer. The epidermis, or at any rate the horny layer of it, is destroyed; either the rete mucosum, or the corium, of which there is no loss of substance, is exposed; and, lastly, healing occurs without the formation of a cicatrix.

The appearances by which excoriations manifest themselves vary, according as they follow pre-existing eruptions, or are caused by a direct destruction of the epidermis. In general, they show themselves as red shining spots, more or less moist or bleeding, of which the margins are sharply cut off from the normal epidermis which surrounds them. These sometimes at once skin over, becoming first covered either with a brown pellicle arising from dried blastema, or with a reddish-black crust formed from blood. In other cases they persist for a long time in an unaltered condition, constantly pouring out fluid and remaining moist.

The excoriations which are consecutive to pre-existing eruptions present fresh varieties, according as they arise from the destruction and rupture of vesicles, blebs, or pustules, or are caused by the loss of the epidermis which formed the covering of papules, tubercles, or wheals. In the former case they are more extensive, and are generally circular or discoid in form. They are also sharply limited by a border of healthy epidermis; and they do not bleed, but are covered merely by a more or less fluid layer of blastema. In the latter case, they are punctiform, or at least not bigger than a lentil, and of a round or elongated form; and they are either still bleeding, or bear a scab formed from dried-up blood.

Excoriations, which are caused by the loss of epidermis from parts of the skin previously healthy, resemble in many respects those just described, but are generally of larger extent; and the crusts which cover them have for the most part a greater thickness.

From the appearances which we have been describing, and from the part of the body which is affected, one is almost always able in an individual case to indicate precisely the nature of the causes which produced excoriations. For in general they occur only where the horny layer of the epidermis has been separated from the mucous layer by exudation taking place *beneath* it, or where the cuticle has been torn from the corium or from the rete Malphigii by injuries inflicted *upon* it. In the first case the excoriation is preceded by an eruption, and the appearances already described manifest themselves. In the other case it is found upon otherwise healthy skin, and owes its origin to friction, to pressure, or to scratching with the finger nails.

(2) The cutaneous ulcer (*Ulcera cutanea,* Hautgeschwüre) is a term applied to a loss of substance of the corium which is caused by past disease of the skin, and in which the restoration of the tissue destroyed is either not taking place at all, or is going on very slowly, because the blastema which is thrown out does not possess the requisite properties.

The points which require observation in an ulcer are its seat, that is, the part of the skin at which it occurs; the condition of its surface, of its base, and of its edges; the state of the integument round it; the quality of the fluid which it secretes; and its subjective symptoms; whether, that is, it causes pain, or is, on the contrary, insensible.

In reference to their form and configuration, it may be remarked that ulcers present very great varieties, according to their position and their duration, the nature of the process which gave rise to them, and the various injurious influences which have acted upon them. The indication of these differences is, indeed, provided for by the terms *Ulcera cruris, syphilitica, chronica, indurata, inveterata,* &c. But these expressions refer to nothing more than the accidental condition of the sore, and are in very few cases to be regarded as names of distinct affections, possessing specific characters. To this, however, the syphilitic ulcer is an exception.

(3) Fissures (*Rhagades, Rhagadia, Rimæ cutis,* Hautschrunden) are elongated and usually linear cracks in the skin, which may affect either the cuticle alone, or the corium also, and which are sometimes dry, sometimes attended with an oozing of formative fluid, or of blood. They arise when the skin is the seat of infiltration, or is abnormally brittle, in parts (such as the fingers, elbows, and knees,) which are liable to much stretching or dragging.

(4) Scales (*Squamæ,* Schuppen). These are plates of dead epidermis of various size, which, in consequence of morbid conditions of the skin, have become partially or altogether detached and cast off from their bed.

Their form, size, thickness, compactness, and colour, are subject to many variations. They may be either flat or raised; they may be merely like dust or bran, or they may be as large as the palm of the hand, or they may copy the form of parts of the body, as, for example, of the fingers. Some are as thin as goldbeater's skin; others are many lines thick; sometimes they are soft and flexible, at other times they are dry and brittle. Lastly, they may have the same colour as the rest of the epidermis; or they may be white, yellow, brown, green, or black.

The process which gives rise to desquamation of the epidermis may affect tracts of skin of very variable extent. When it is an independent disease, that is, when it is preceded or accompanied by no other discoverable cutaneous affection, it is termed a pityriasis; whereas the same appearance receives the name of desquamation (*Desquamatio,* Abschuppung) when it is the result of a previous disease of the skin. Moreover of this last, certain subdivisions are recognised. There is the *Desquamatio furfuracea,* when the scales are small, and resemble meal or bran; the *Desquamatio membranacea*, when the cuticle becomes detached in large membranous pieces; and, lastly, the *Desquamatio siloquosa;* a rare appearance, in which saccular elevations of the epidermis are formed by the exudation of fluid beneath them, which elevations persist as empty shells, after this fluid has escaped or has been absorbed.

(5) Crusts (*Crustæ,* Krusten, Borken, Grinde,) are those solid masses which are formed as a result of disease of the skin, by the drying up of exuded fluids, or of extravasated blood. They present many different appearances, according to the causes which give rise to them. Thus, serous exudations produce by their desiccation merely flat brown scabs; whilst sebum by itself, or in admixture with pus, always dries into yellow crusts, resembling honey or gum. Again, those which are formed from pus alone, have a green hue, which is changed by the presence of blood, into a brown, or even into a black colour.

The thickness or height of a crust depends partly on its duration, and partly on the rapidity with which the exudation which gives rise to it is poured out. In general, crusts become more elevated in proportion as their formation is slow and of long duration, while exudations, which take place rapidly, produce but thin scabs. Some crusts are flat; others are raised or even conical; and sometimes they may be observed to have a conchoidal, scutiform, or alveolar appearance.

(6) Lamellated crusts (*Crustæ lamellosæ,* Schuppengrinde). As their name implies, these occupy an intermediate position between scales and crusts. They consist of layers of epidermis and of dried sebaceous secretion or inflammatory exudation, placed one over the other in strata, so that there is no great difference in the proportion of their component parts. They are easily recognised by their flat appearance; by the colour of their surface, which is, for the most part, whitish-yellow; by their laminated structure, and by the differences in the colour of the individual layers.

Their occurrence is limited to those cases, in which small quantities of sebum or of exudation are deposited at the same spot, at regular intervals, between which the epidermis has time to reproduce itself beneath the effused matters.

Examples of *Crustæ lamellosæ* are afforded by the flat layers of sebum, from a pale yellow to a black colour, which are found on the scalps of children who are not kept clean; by the similar appearances in *Seborrhœa capillitii,* and by the yellow or brown thin plates which occur in *Porrigo scutulata* (*Herpes tonsurans.*)

(7) Scars (*Cicatrices,* Narben) are the structures which replace portions of skin which have undergone destruction. They are distinguished from the healthy integument by their greater hardness, by their smooth, shiny aspect, and by the absence of pigment, of hair, and of glandular openings upon their surface.

Thus the growth of new tissue, which gives rise to cicatrices, makes up for the loss of substance in the skin only by regenerating its fundamental structure, the connective-tissue elements. The other tissues which are peculiar to it, the papillæ, the hairs, and the sebaceous glands, are not restored by this process.

The peculiarities in the form of certain scars depend less on the nature of the morbid process which caused the loss of substance, than on the circumstances which attended the cicatrisation. Hence it follows, that a cicatrix presents no positive marks from which one can with certainty draw conclusions as to the past disease which gave rise to it. In other words, there are no *characteristic* cicatrices. A scar may present the same smooth appearance whether it arose from an ulcer, a wound, a burn, or a scald, or from the application of some corrosive agent, provided only that the healing process was not accompanied by the formation of connective-tissue in excess, or that the resources of medical science kept this within proper limits. On the other hand, precisely similar injuries may lead to raised, prominent, cord-like, radiating, or funnel-shaped cicatrices, and for this some peculiarity of the loss of substance may be answerable; or it may be the result of cicatrisation occurring (either spontaneously or from bad management,) without the uniform development of granulations.

Varieties in the colour of cicatrices are caused by their age. Those which are quite recent have, for the most part, a pale red surface, and the blood-vessels which they contain may frequently be seen through the cuticle in the form of red serpentine lines. Old cicatrices sometimes contain pigment, sometimes have a perfectly white, shining appearance.

As for the subjective symptoms to which they give rise, most cicatrices are less sensitive than the healthy skin; but, on the other hand, there are some which are extremely painful.

III.—*On the Distribution of Eruptions over the Skin.*

The forms of efflorescence, primary and secondary, which we have described in the preceding section, present many varieties in their mode of spreading and distribution, from which the affections to which they belong derive various peculiarities in their (Zeichnung) pattern.

These peculiarities (Zeichnungen) have been regarded as standing in a causal connection with the essential nature of the affection: and they have been used as names for *species* of diseases of the skin, while the *genera* were based on the form of the primary efflorescence. Thus, dermatologists were of opinion that changes in the mutual relations of the elements of an eruption were associated with alterations in the nature of the disease. In this they took for an example the case of plants, in which differences in the position of the leaves and flowers do, of course, characterise different species of the same genus. The comparison is, however, a bad and unsuitable one; for, in diseases of the skin, the mutual relations of the parts of an eruption are, in fact, sometimes quite accidental, and therefore variable: and sometimes they are dependent on laws which are very different from those which these writers regard as determining them. If we endeavour to ascertain these laws, we find the peculiar pattern of certain skin affections to arise partly from the anatomical arrangement of the cutaneous vessels and nerves, partly from the way in which these diseases spread, *per contiguum*, from one point to another. But these conditions are very far from explaining all the peculiarities in the mutual relations of the parts of an efflorescence; and, in most cases, we are obliged either to attribute them to chance, or to confess freely our ignorance of the laws which produce them.

If we attempt to attach more distinct conceptions to the different terms employed by authors to designate the appearance and outline of cutaneous diseases, we arrive at something like the following:—

Every efflorescence, whatever may be its form, consists of elements (which may of course have different characters, and do not necessarily resemble one another), which either stand each by itself surrounded by healthy skin, or touch and blend with one another and thus undergo modifications in their original form, [illegible] lost. Thus, then, all eruptions may be divided into those which are distinct (*Efflorescentiæ discretæ*), and those which are confluent (*Eff. confertæ*).

These names, however, are not the only ones which are used to indicate these characters. We find in books the epithets *solitarius, sparsus, intertinctus, disseminatus, punctatus, guttatus, monocarpus,* &c. All these have the same signification as the word *discretus,* and therefore we regard them all as synonymous with it. And again, the terms *confluens, aggregatus, diffusus,* have exactly the same meaning as *confertus,* when used of diseases of the skin.

It is, however, very different with those designations which are used to indicate the special features of an efflorescence (die besondere Krankheitsbilder). Thus, the term *corymbosus* is applied to those eruptions which form groups, such as herpes. The names *orbicularis, circinatus, centrifugus,* and *annulatus* or *annularis,* to those which are arranged in circles,[1] as in psoriasis, roseola, erythema, &c. The epithet *iris* belongs to that morbid appearance which is distinguished by concentric rings, or by a circle of which the centre is itself the seat of an efflorescence. Instances of it occur in herpes, erythema, &c. The terms *gyrus, gyratus,* are applied to segments of circles, which are found either singly, or in groups, so as to have a serpentine arrangement; they are observed in psoriasis, erythema, &c. The same appearances receive the epithet *serpiginosus* when they belong to ulcers, or to elevated growths of new tissue, such as lupus, or the syphilitic *serpiginous* ulcers, &c.

Discus (Scheibe), *discoides, nummularis,* are terms given to those eruptions of which the appearance is like a coin, or a flat round plate, and the designation *scutulatus, scutiformis,* is applied to those forms of skin-affection which, though round, are not discoid or nummular, but shield-like or saucer-shaped, that is to say, excavated in the centre. Examples of this are found in favus, psoriasis, &c.

The term *circumscriptus,* again, is used of those affections whose margins appear on all sides sharply cut off from the adjacent healthy skin. *Marginatus,* on the other hand, is employed when such a defined border does not surround the whole of the efflorescence, or even when it is observed only at one extremity of it, while the opposite end becomes gradually pale, shades off into healthy skin, and, to use a common expression, seems as if "washed out" (wie verwaschen). Maculated rashes (fleckige Röthungen), that is to say, red patches alternating with parts of the skin which present the normal colour, receive the epithet *variegatus*, in contradistinction to those which affect the skin uniformly, and for which the name *lævigatus* is used. The appellations *figuratus*, *agrius*, answer to no definite characters, but are applied by different authors arbitrarily, now to one, now to another form of cutaneous disease.

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[1] It would be very desirable to indicate by distinct names, the differences in the nature of these circles. For some of them are caused by the arrangement of the individual elements of the efflorescence, which form a ring round an imaginary centre; and for these circles we would use the epithets *circinus, circinatus;* while the names *annulus, annulatus, annularis,* would serve for those which are developed from round discoid eruptions, which get well first at their centre, and thus lead to the formation of rings.

Certain of these epithets, again, refer to the form or to the colour, or to some other feature of the cutaneous disease, merely as it exists at the time. Such are the terms *inveteratus*, *acuminatus*, *verrucosus*, *mucosus*, *granulatus*, *tumidus*, *fungosus*, *exuberans*, *excorticans*, *rodens*, *exedens*, *sordidus*, *lactifluus*, *madescens*, *siccus*, *microcarpus*, *macrocarpus*, *amiantaceus*, *prominens*, *lenticularis*, *miliaris*, *tuberosus*, *flavescens*, *nigricans*, *melanodes*, *albidus*, *ruber*, *amorphus*, *crystallinus*, *coniformis*, *globulosus*, *pemphigodes*, *fimbriatus*, *suberinus*, *achatinus*, *escharoticus*, &c. There are others which relate to the age and sex of the patient, such as *neonatorum*, *infantilis*, *puerilis*, *adultorum*, *senilis*, *virilis*, *muliebris*. Others, again, indicate particular regions of the body, as *capillitii*, *faciei* or *facialis*, *larvalis*, *cervicalis*, *mammarum*, *pectoralis*, *abdominalis*, *extremitatum*, *brachialis*, *palmaris*, *femoralis*, *plantaris*. Moreover, some have reference to the duration of the disease, as *fugax*, *ephemerus*, *acutus*, *chronicus*, *volaticus*, *perstans*. And others relate to its geographical distribution, such as *septentrionalis*, *tropicus*, *Aquitanicus*, *Asturiensis*, *Lombardicus*, *Bothnicus*, *Esthonicus*, *Sibiricus*, &c.

All these terms have for us no greater value than is implied by the sense of the words. They may pass as means of defining with greater precision the more or less accidental (and therefore not characteristic) appearances which an eruption presents at the time; but they are not to be used (as was done by Willan, and by all those who have followed his system, with or without modification) as names for the different species of a genus. In the natural history of minerals, of plants, and of animals, such terms are applied in this way, and are rightly so applied; and it was from this source that the older dermatologists, who compared the different cutaneous eruptions to flowers and fruits, derived the principles of the nomenclature which they adopted for diseases of the skin. But they certainly made a mistake in doing so.

We do not, then, set the same value as our predecessors and contemporaries on the usual denominations of dermatoses, in which a specific as well as a generic name is invariably employed. On the contrary, in naming a skin-affection, we content ourselves with the use of a single appellation, unless we consider the addition of an epithet necessary to define more accurately the nature of the disease. We adhere, in fact, in this respect, to the nomenclature which is now generally employed for the other diseases of the human organism.

For similar reasons, we must protest against giving a general name to any cutaneous disease, merely because its presence is confined to a particular part of the skin; for each cutaneous affection may appear on any part of the surface of the body which presents the anatomical conditions necessary for its development. And therefore, to give to a disease a name derived from its seat alone is inadmissible; and the terms *Tinea, Porrigo, Crusta lactea, Mentagra, Pygagria, Palmaria,* &c., should be transferred to the domain of history.

CHAPTER II.

ON THE DIAGNOSIS, ETIOLOGY, TREATMENT, AND CLASSIFICATION OF CUTANEOUS DISEASE IN GENERAL.

I. *Diagnosis.*

FOR the recognition of a disease of the skin, no other assistance is required than a knowledge of the objective symptoms, which are visible on the surface of the body in each particular case. We do not attach any value whatever, either to the history or to the subjective phenomena in investigating a cutaneous affection; for we ought to be guided in this matter only by those symptoms which are appreciable by the sight, the touch, or (sometimes) by the smell. These afford certain and infallible grounds for the establishment of a diagnosis, for they have their origin in the malady itself. They are, so to speak, the alphabet, of which the letters are traced on the skin; and our task is but that of deciphering the writing.

To accomplish this, it is peculiarly important to have a method in the investigation of every skin affection, and not to neglect certain rules in examining the cutaneous surface when diseased.

Above all, the whole of the body should be looked at, even in cases in which the malady is nominally or really confined to one particular spot; for it frequently happens that the disease (das Krankheitsbild) assumes quite a different aspect when regard is paid to the appearances presented by every part of the surface, from what it would have if those spots only were examined which were indicated by the patient as its seat. By attending to this rule, one is often enabled to find very different and much more reliable grounds for the diagnosis of cutaneous diseases than could be obtained in any other way.

It must not be objected that an examination of this kind, though it may do very well in a Hospital, cannot be carried out in private practice, and especially in the case of female patients. It is quite a mistake to make this assertion. In the first place, decency should never be disregarded, even in Hospital practice; and by us at least, no procedure is adopted, at which decorum or modesty could take offence. It is quite unnecessary to conduct an examination of the skin, so as to cause any discomfort to the patient. The principal parts of the body should be looked at in succession, and in their anatomical order; the genitals and the breasts should be left untouched; or where this is impossible, their inspection should be deferred to the last; and then all patients will submit readily to an examination which is undertaken for their own benefit. Again full day-light, and sufficient illumination are indispensable to the thorough observation of the skin's surface. However brilliant an artificial light may be, and whether derived from candles, lamps, or gas, it always gives the skin, whether healthy or diseased, a different appearance, and generally makes it look paler than by day-light. Another point, which may be of considerable importance in examining a cutaneous affection, is the warmth of the air; for both the higher and the lower degrees of temperature modify the colour of the surface. The ordinary temperature of rooms (66° Fahr.) is the most proper. For the same reason one should avoid making the diagnosis of a skin disease, either during or just after the employment of a cold or warm bath by the patient.

Due regard being paid to these considerations, the examination of the case may be commenced, and in doing this, our object is not, as might be supposed, to endeavour to find some real or imaginary *primary efflorescence*, but rather to keep to the *general appearance of the disease* (das Gesammtbild), not allowing ourselves to be beguiled by any special symptom, however striking it may be. The following are the chief points which require to be noticed.

(1) In regard to the *surface* of the skin, it must be observed whether this is smooth, soft, even, with a greasy lustre, and free from crusts or scales,—or whether it is harsh, ready to crack, uneven, dry, and covered with scales or scabs. It has also to be noted whether the natural lines and furrows are too shallow or too deep, too near or too widely separated from each other; what is the condition of the pores of the skin, whether or not they are plainly visible, and whether pervious or obstructed; and lastly, whether the growth of hair is normal, excessive or deficient. For these various circumstances enable us to draw certain conclusions as to the pathological changes in the different tissues which form the skin.

Thus the healthy integument is smooth and soft to the feel, and has a slight greasy lustre; and the shedding of its epidermis goes on without visible desquamation. The lines and furrows which exist on its surface are moderately pronounced, and are about a millimetre apart. The apertures of the sebaceous and sudoriparous ducts, or the cutaneous "pores," as they are called, are at some parts not to be seen, while elsewhere they may be observed as slight depressions about two millimetres distant from each other. The amount of hair varies with the sex, and also according to the colour of the hair itself, but keeps within certain limits both as to quantity and quality.

On the other hand, when the epidermis is developed abnormally the surface of the skin may be rough, uneven, dry, chapped, or traversed by fissures, and covered with scales of various colours and thickness (as is the case in pityriasis, ichthyosis, prurigo, &c.). The lines and furrows also may be abnormally deep, and separated from another by hypertrophic papillæ to a distance of two or three millimetres. Again, the openings of the follicles may be plugged with sebum, and dilated (as in seborrhœa). Lastly, the hairs may fall out or may be imperfectly developed; or on the other hand, they may be unusually thick, and may be present in increased numbers.

(2) Again it has to be considered, with reference to the colour of the skin, whether the pigment is excessive in amount, or deficient, and whether it is irregularly distributed; whether the surface is abnormally red, either in its whole extent or in patches; or whether lastly it deviates from the healthy colour in the direction of too great pallor.

Thus, in respect of the pigment contained in the skin, it has to be noticed whether this is uniformly distributed, or is confined to particular spots, of greater or less extent; whether the pigmentation corresponds to that of the race of men to whom the individual belongs, and to his age, sex, residence, and occupation, as well as to the colour of his hair, the season of the year, &c.; or whether there is any deviation from the normal condition in these respects; and further as to the intensity of the pigmentation, whether the epidermis has merely a yellow tinge, or is of a brown or dirty-black hue. Again the pigmentation may be defective, either universally or in parts of the surface. And in this case we have to consider whether besides the partial absence, there is not also at other points an excess of pigment. Lastly, it is to be observed whether the tracts which present these appearances are bald, or are on the contrary covered with hairs of a dark or white colour, corresponding to that of the surface on which they grow.

Now it is extremely difficult, to establish a norm for the pigmentation of the skin of a healthy person, for this is liable to be modified by many circumstances. But at least this much may be said, that the normal skin of individuals of our own (that is, of the Caucasian) race, generally displays an uniform pale chamois colour, and that a darker tint is observed only at certain points, such as the nipple, the labia pudenda and the scrotum.

Accordingly all *irregular* coloration must be regarded as morbid, whether it is circumscribed or diffused, and whether the skin is darker or paler than it should be, whether bald or covered with hair. This applies to cases of the so-called *Lentigines, Ephelides, Chloasmata, Nævi spili et verrucosi;* and also to the *Vitiligines*, the *Achromasiæ*, &c.

The same thing may be said also of all colorations and discolorations *(Decolorationes, Dyschromasiæ)* in which there is any considerable deviation from the normal tint of the skin, even though the morbid condition is uniformly distributed over the whole surface of the body.

As to the cases in which the skin presents a red coloration, this of course either depends on the capillaries being more or less injected, or it arises from extravasated blood. The pressure of the finger is employed to settle this question. If the redness disappears on the application of pressure, which can of course be ascertained only after removal of the finger, this is a proof that the blood has not escaped from the vessels, but is merely retarded in its course and accumulated in the cutaneous capillaries. To this condition, as is well-known, the terms *Hyperæmia* and *Stasis* are applied. If, on the contrary, the red spot retains its colour without alteration, however forcible the pressure which is brought to bear upon it by the finger, the redness then arises from extravasated blood, and thus the proof that hæmorrhage has occurred, is established.

Remark.—Beyond the determination of this point, namely, whether the reddening of the skin is caused by hyperæmia or by hæmorrhage, we derive no further assistance in diagnosis from the application of pressure by the finger. For we have been unable to find any confirmation of the statement made in almost all medical works, that when the pressure is removed the re-appearance of the red colour takes place, sometimes from the centre towards the periphery, sometimes from the periphery towards the centre. This must either be simply a mistake, or must depend on differences in the form of the surface and in the mode in which the pressure was applied. For if a flat yielding surface, like the inside of the thigh, be pressed on by a hard convex body, such as the finger-tip placed vertically, the centre will, of course, be subject to greater compression than the periphery. Now the more forcible the pressure on the cutaneous vessels, the longer will be the time required for them to fill again with blood. Hence the redness will reappear first at the periphery (which received least pressure), and last at the centre (which was the most compressed); in other words the redness will return from the circumference to the centre. The same thing will occur when a hard convex surface, like that of the thorax is pressed on by one which is yielding and flat or nearly so, such as the pulpy extremity of the finger. And on the other hand, pressure on a concave surface like the groin, by means of a flat one, will necessarily affect the periphery more than the centre; and in such a case the redness will re-appear in the centre first, and later in the circumference.

(3) Attention must next be devoted, in the investigation of cutaneous affections, to the size of the part, and to the thickness and degree of infiltration of the cutis.

Changes in the size of any tract of the skin cannot readily escape observation when looked for, particularly if they are not symmetrical, for we can then always find a standard of comparison on the opposite or healthy side of the body. To ascertain the thickness of the cutis, the best method of proceeding is to raise the skin into a fold, and to compare the transverse diameter of this either with that of the corresponding part on the opposite side of the patient, or on a healthy person. In this way the degree of infiltration of the skin may also be estimated.

(4) Next, and most important for diagnosis is the appreciation of the appearances produced by the scratching of the patient. One becomes in this way quite independent of the statements of the patient as to the subjective sensations of itching; for no one, who does not really itch, will scratch himself to any extent. And apart from this advantage, an accurate acquaintance with the phenomena to which the irritation of scratching gives rise, affords positive or negative assistance which is of the greatest value in diagnosis. For we know that certain diseases such as scabies, eczema, prurigo,

and urticaria are always, and that others, as for example the syphilitic eruptions, are never attended with itching. And we are thus able to exclude altogether either the one or the other of these groups of diseases.

In order to give an exhaustive description of the excoriations which are produced by scratching, and chiefly by the finger nails, we have to distinguish certain varieties of them according to the degree in which the various tissues of the integument have been injured or have undergone pathological changes, and also according to the intensity presented by these appearances.

Under the first head, we have to remark, that the participation of the papillæ, in the form of hyperæmia of their vessels, is shown by the presence of red striæ, or of diffused redness *(Erythema urticans)*. The follicles also become swollen by exudation in their periphery, and produce elevations above the surface, which take the form either of red papules *(Lichen urticatus)* or of wheals *(Urticaria subcutanea)*. Repeated scratching gives rise to exudation on a larger scale, which penetrates between the layers of the cuticle. This next becomes raised; vesicles with or without a red periphery or base make their appearance; and an *Eczema* is developed. Or if the contents of the vesicles become purulent, they then form pustules of various sizes, and thus constitute an *Ecthyma*.

The effect of the scratching on the epidermis is either to lacerate it and to tear it to a greater or less depth away from its bed, in other words to produce *excoriations;* or merely to make the skin assume a darker colour, from *increase of pigment*.

In reference to these excoriations, we may be allowed to [1]establish three grades of them, which, being produced by the different degrees of force employed in scratching, enable us to draw inferences as to the intensity of the itching. When this is slight *(Titillatio)* the scratching is also inconsiderable, and neither long-continued nor often repeated. Hence the most superficial hard layers of the cuticle are alone injured by it, and become detached in the form of mealy dust, or of bran-like scales from the deeper strata, which still remain adherent. Itching of the second degree *(Formicatio)*, on the other hand, being more intense leads to a severe and more protracted scratching; and by this the whole of the horny layers of the cuticle is violently torn from the rete mucosum, of which the red moist

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[1] 'Zeitschrift der k. k. Gesellschaft der Aerzte.' Jahrg., 1846; 1 Band., p. 332, et seq.

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surface is exposed. The consequence of this is that the blastema, which is poured out by the papillæ for the production of epidermis, dries into a thin yellowish-brown firmly-adherent scab, just as we see a similar scab formed after the application of a blister. In the third and most violent degree of itching (*Pruritus*), which of course involves an incessant rubbing and scratching in which great force is employed, not only is the epidermis quite torn away from the corium, but this itself becomes injured. The minute vessels of the papillæ are lacerated; hæmorrhage takes place; and by the drying of the drop of blood which is poured out, there is formed a reddish-brown or black scab of greater or less size.

The phenomena which we have been describing are those which are observed when the scratching is practised on a skin which is not diseased. They, of course, present somewhat different features when, simultaneously with the itching, there exists also some other morbid change in the skin. It is scarcely possible to give a general sketch of the morbid appearances which are then produced; but this much may with confidence be asserted, that eruptions which are elevated above the cutaneous surface will always be the first to be attacked, and will often be partially or completely destroyed, by the agency of the fingers in scratching, and that the intervening tracts of skin will come in for their turn only when the parts which were covered by the eruption have been brought to the level of the integument. Hence it is explicable that in prurigo the papules, in eczema the vesicles, in psoriasis the separate red patches, with their coverings of scales, are the points which first show the effects of scratching, although the patient tears away at almost all parts of his skin, without selecting any particular spot.

As for the deposits of pigment which are the result of scratching, it may be noted that these have a direct relation to the intensity of the itching. This can be most clearly demonstrated in scabies, eczema, and prurigo, in which affections no abnormal dark coloration of the epidermis is at first to be observed. In fact, these pigmentary deposits appear only during the progress of these diseases; they advance *pari passû* with the increase in the excoriations, and they are to be found only at those parts where the patient is constantly scratching himself.

3. We have now only to direct our attention to the other symptoms which have not as yet been referred to. Regard must be paid to the form, the number, the arrangement, and the position of the

primary and secondary symptoms, which have already been described. We must endeavour to ascertain what pathological process lies at the bottom of the existing cutaneous affection; what injurious influences have been in operation upon the healthy or diseased skin; what are the age, the sex, and the occupation of the patient; what has been his mode of life, and how he has been fed, lodged, and clothed. Our object must, in fact, be, as we said at first, to take a broad view of the case as a whole. An accurate diagnosis will with much more certainty be arrived at by the investigation of these various points than by searching merely for an accidental (jeweilig) primary efflorescence.

II.—*Etiology.*

The causes which give rise to diseases of the skin are partly such as are internal and rooted in the organism itself, partly such as are external, and by which the integument is alone, or at least primarily or chiefly, affected. Dermatoses, therefore, have long been divided, in reference to their etiology, into the symptomatic (universal, deuteropathic, *dermapostases* and *dermexantheses*), and into the idiopathic (protopathic, local, *dermatonoses*).

In regard to the first of these groups, the opinion was entertained that a common cause lay at the foundation of all, or at any rate of most, skin-affections, which was sought for in a special change in the composition of the juices. This condition was supposed to give rise only to cutaneous diseases, and was known as the *Dyscrasia herpetica:* but as its existence is extremely problematical, and as no evidence of it has as yet been brought forward, we do not feel called upon to admit it.

We do, however, know that some affections of the skin are so connected with certain maladies which have been shown to be blood-diseases, that we cannot but regard them as the effects of those diseases. We have examples of this in the acute exanthemata, in variola, morbilli, scarlatina. There are also the rashes which occur in typhus, consisting of papules, of spots (*roseola, purpura*), or of vesicles (*miliaria*). Again, in cholera, cutaneous affections are observed as maculæ (*roseola*), or as tubercles (*erythema papulatum et tuberculatum*); in albuminuria, as purpuric spots, as pruriginous papules, and as œdema; in uræmia, as sebaceous secretion, containing urea and uric acid—the so-called uridrosis; in pyæmia, as *erysipelas, dermatitis, impetigo,* and in the form of pustular and furuncular eruptions; in cholosis, as a yellow or brown coloration of the skin; in chlorosis, as sallowness and pallor, with infiltration of serum into the integument. In fact, in all these conditions, as well as in syphilis, scorbutus, scrofulosis, tuberculosis, the cancerous cachexia, &c., with their manifold and complex symptoms, blood-diseases are associated with changes in the skin.

Moreover, diseases of particular systems and organs are wont sympathetically to involve the integument. Thus affections of the intestinal tract, of the internal sexual organs, of the liver, the spleen, the kidneys, and of the urinary apparatus, give rise sometimes to urticaria, sometimes to seborrhœa, eczema, or acne, sometimes to various forms of pigment-deposit. Again, diseases of the heart, blood-vessels, or lungs, produce disturbances in the circulation, which manifest themselves by increased vascular injection, and by a bright red or bluish-red coloration of the skin. Lastly, there are various physiological processes, such as menstruation and pregnancy, and also dentition, which indicate themselves by appearances of different kinds, affecting the cutaneous surface. Unfortunately, we are very seldom in a position to demonstrate the real connection between the internal affection which causes, and the skin-disease which is caused. We see only that they occur together, that they are intimately related, that they mutually react upon each other. But we are not at the present day able to show accurately why a general disease, such as albuminuria, should give rise to a skin-affection such as prurigo; or why from a disorder of an internal organ like the uterus should be derived a dermatosis, as, for example, chloasma.

Besides these visceral affections, an influence in the generation of cutaneous diseases is exerted likewise by ordinary injurious agencies, which arise from the age of the patient, his business and mode of life, the way in which he is fed and housed, and the climatic conditions to which he is exposed. There are also the different contagia, of which some present themselves in association with tangible substances, or as inoculable fluids; while others are only recognised by their effects, and are linked to no solid or fluid matters.

Hereditary transmission, again, from parents to their offspring undoubtedly takes place in certain forms of cutaneous disease, among which are psoriasis, ichthyosis, elephantiasis Græcorum, syphilis, &c. The cause of this is, however, to be sought, not always in a special dyscrasia, but rather in the reproduction in the offspring of the whole habitus of the progenitor, by which also the fact is explicable that children have hair of the same colour as their parents, whether this be light, red, or black. Lastly, diseases of the nervous system must not be overlooked as the causes of certain dermatoses, although with reference to this point all accurate investigation is as yet wanting. One can at most draw negative conclusions, and regard skin affections which are associated with morbid sensations, such as itching, pain, want of sensibility, or anæsthesia, as the effect of perverted innervation.

In conclusion, we must not forget to mention that even mental disorders and diseases (Gemüthsaffecte, Psychopathien) are said to have the power of producing certain cutaneous affections, such as urticaria.

Much more potent in the generation of diseases of the skin than the internal causes which have their seat in the organism itself, are those agencies which are external to the body, and which affect the skin directly. Thus are produced the so-called *idiopathic dermatoses.* Even among these agents, the effects of climatic conditions, of dress, and of occupation and mode of life, &c., must not be overlooked; and, apart from these, there are numberless other injurious influences, such as those of weather—that is to say, of heat and cold, of dryness and moisture, &c.—which cannot be escaped, being universal, and affecting everybody in a greater or less degree. But there are also others among these causes of disease which depend on conditions peculiar to the individual. Examples of these are afforded us by the different arts and trades, in which the skin is often injured by the handling of the necessary tools, by the exposure of the body to very high or very low temperatures, by the operation of corrosive substances, &c.

Man is often his own worst enemy, for he practises a number of occupations which subject him to various cutaneous affections; and he neglects many of the precautions which would protect his skin from disease. Thus, one of the chief factors in the causation of the idiopathic dermatoses is the permanent action of pressure, or the frequent repetition of blows upon the integument, or the constant friction of some solid body which comes into direct contact with the skin. And under this head may be reckoned, besides many other injurious influences, the scratching of patients who suffer from the itching of cutaneous diseases.

Neglect of the skin, and that sin of omission, want of cleanliness, are well known to be fruitful causes, from which not a few cutaneous affections derive their origin. But the same effect may in the end be produced also by the opposite proceeding, that is to say, by too frequently repeated or too energetic washing and bathing.

In enumerating the causes which produce cutaneous disease, those also must unfortunately be mentioned which, no doubt with good intentions, are employed in the practice of the healing art. As is well known, the rubefacientia and the epispastica play an important part in Hippocratic medicine. We are far too lavish with sinapisms, vesicants, mezereum, Ol. Crotonis Tiglii, tartar-emetic ointment (Ung. Autenriethi), and issues. Even the moxa, and the actual and potential cautery are still too often used. They are generally applied with the object of effecting (by means of the powerful irritation of the skin which they produce) a derivation from some internal organ which is the seat of disease. How far this end is obtained is uncertain, and opinions about it are divided. For my own part, I think that the supposed but not proven good effects of the use of the epispastica are far outweighed by the demonstrably evil results of their application to the skin. Daily experience furnishes the proofs of the correctness of this opinion, with reference to which we shall, in another part of this work, enter into greater detail.

The epiphyta and epizoa, of which some are met with in the protective horny tissues—some in the substance of the cutis itself—are frequent causes of cutaneous disease. The epiphyta, which invariably belong to the class of fungi (Pilze), consist of minute bodies, which measure from 0·005—0·05 millimetres, and are termed spores (*Sporidia, Sporuli*, Sporen). They are either naked or enclosed in special organs (*Sporangium, Theca*), and they are seated on a common base (the *receptaculum*, or *conceptaculum*). They reside either in the epidermis alone, or in the hairs as well, or, lastly, in the nails also. The following eight species[1] have, up to this time, been discovered in these tissues:

1. The *Trichophyton tonsurans*. Malmsten first found this fungus in the hair. I demonstrated the fact that it occurs also in the epidermis,[2] in cases of herpes tonsurans.

2. The *Mycoderma plicæ Polonicæ* (Günsburg), and the *Trichophyton sporuloides* (Walther), in the Plica Polonica (Weichselzopf).

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[1] Küchenmeister. 'Die pflanzlichen Parasiten.' Leipzig. 1855, p. 30.

[2] 'Zeitschrift der k. k. Gesellschaft der Aerzte,' x Jahrg., 1854, Heft xii, p. 473.

3. The *Microsporon Audouini* (Gruby), in porrigo decalvans.
4. The *Microsporon mentagraphytes* (Bazin), in sycosis.
5. The *Microsporon furfur* (Eichstedt) in pityriasis versicolor.
6. The *Achorion Schoenleinii* in favus.
7. The nail-fungus: according to Meissner, a species of *Aspergillus;* in the Onychomycosis of Virchow.
8. The *Oidium albicans*—on the nipple (Küchenmeister).

The animal parasites which choose the skin as their scene of action (Tummelplatz) are divided into

I, The *Dermatozoa,* which either always, or at any rate during part of their existence, dwell within the substance of the skin, and

II, The *Epizoa,* which merely seek their food upon the skin's surface, residing either in the appendages of the skin, namely, on the hairs, or in the clothing or other surroundings of persons infested by these parasites.

To the first class belong

1. The *Acarus scabiei* (Krätzmilbe) or itch insect.
2. The *Acarus folliculorum* (Haarsackmilbe) or pimple-mite.
3. The *Pulex penetrans* (Sandfloh), the sand-flea or chigue.
4. The *Filaria medinensis* (Peitschenwurm) or guinea-worm.
5. The *Leptus autumnalis* (Erntemilbe) or harvest-bug.

In the second class we enumerate,

1. The *Pediculus* (Läuse) or louse, including
    (1.) The *Pediculus capitis* (Kopfläuse), the common louse.
    (2.) The *Pediculus pubis,* seu *Phthirius inguinalis,* the crab-louse (Körper- oder Filzläuse).
    (3.) The *Pediculus vestimentorum,* seu *humani corporis* (Kleiderläuse) the body-louse.
2. The *Pulex irritans* (Flohe) or flea.
3. The *Cimex lectularius* (Wanze) or bug.
4. The *Culex pipiens* (Mücke, Gelse) or gnat.

These parasites may give rise to cutaneous affections in two different ways. By nestling in the skin they irritate it, and dispose it to take on morbid action, to become hyperæmic, and to present exudations, hæmorrhages, degenerations of the epidermis, &c. And they also excite the sensibility of the cutaneous nerves, and thus produce itching or pain, which sensations are themselves additional causes of disease.

Besides these general and local agents, of which the effects are known to be injurious, there are doubtless many others which have as yet escaped our observation, for we see many cutaneous affections arise without being able to point out their source. But we prefer to confess our ignorance in this matter, rather than to get out of the difficulty by referring these diseases to chills, errors of diet, mental disorders, nervous influences, or to the epidemic or endemic constitution, &c.; which expressions are in fact quite vague and destitute of real meaning.

III.—*Treatment.*

Although in the course of the last few years great attention has, on all sides, been devoted to this department of medicine, we have unhappily made as yet but little progress towards the wished-for end, the cure of all cutaneous diseases. The cause of this lies, no doubt, partly in the fact that it has been only quite recently and during a time, very short for making exact investigations, that therapeutical experiments have been carried on in a rational spirit, and without bias. For before one can speak of the action of a remedy in the treatment of any skin-affection two things must be ascertained: the course taken by the disease when left to itself, and the effects which are produced by the remedy when applied to the healthy skin. Our want of success depends also, in part, on our defective knowledge of the dermatoses, and on the small extent to which the pathological chemistry of cutaneous diseases has been cultivated. It seems to us that a very promising field for investigation is afforded by dermatology to those who are interested in this new branch of science. Unfavorable circumstances have, however, as yet prevented us from exploring it ourselves; and this task must, therefore, be postponed to a future opportunity or left to other observers.

In the imperfection, or rather in the complete absence of any rational basis for our therapeutical procedures in the treatment of skin affections, no expedient remains but pure empiricism. For the slight success which we have hitherto obtained we are indebted entirely to the strictly practical course which we have pursued in this respect. We have tried methods of the most varied description, whether they were recommended by medical men or by unprofessional persons, and we have found some belonging to the former category less effectual than they were represented to be, while popular remedies, on the other hand, have often done us good service.

Before passing on to enumerate the different remedial agents, we shall be permitted to allude to a few deeply-rooted prejudices which interfere even now, to some extent, and interfered still more formerly, with the employment in practice of certain methods of treatment.

The first of these prejudices which we must combat is the dread with which local applications were regarded.

Some years since we drew attention to the fact that it is quite a mistake to suppose that the action of remedies applied to the diseased or healthy skin is necessarily merely topical and not general.[1] For we need but call to mind the contagia of small-pox, syphilis, hydrophobia, and the poisons of serpents, and of the dissecting-room, which are generally introduced through the skin, to prove that it is an organ which absorbs very readily many forms of virus. And that it is equally adapted to absorb medicinal agents also, and to admit them into the circulation, even while the epidermis is intact, can be easily shown during the external use of tar, of iodine, or of the mercurial preparations.

Now, what can be demonstrated in the case of certain remedies by chemical reactions ought surely not to be denied *à priori* in regard to others; and therefore we maintain the exact contrary of the principle we have alluded to, and assert that, with the exception of caustics (Aetzmittel), all remedies which are brought into prolonged contact with the skin are absorbed by it, and taken up into the fluids of the body.

Hence we have no fear, in applying topical remedies, of driving in cutaneous diseases, or of producing any other ill effects, for which the practitioners of the old school had various expressions. Our apprehension is rather of a too violent action upon the organism in general, especially in the case of those drugs which are liable to produce derangements of the vegetative processes. Nor have we any dread of curing skin-affections too quickly. On the contrary, it is the object of our warmest endeavours to find means of terminating these diseases as speedily as possible. Were we only in the possession of remedies which produced cures thus rapidly, we should have no anxiety with regard to the appearance from this cause (Nach schnell unterdrückten Flechten) of metastases, or of any other consecutive diseases.

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[1] 'Zeitschrift der k. k. Gesellschaft der Aerzte,' iii Jahrg., 1 Bd., 1845, p. 349.

There is another point also, in which we are opposed to our predecessors and to many of our contemporaries, and that is with reference to the necessity for using in the cure of chronic skin-affections remedies which are supposed to be purifiers of the blood (*Hæmatocathartica,* Blutreinigende). We have never seen the effects which are ascribed to them by some authors, produced either by the long-continued administration of laxatives and drastics, nor by decoctions of woods (Holz-tränke), nor by vegetable juices. Again, the internal use of antimonials, baryta, graphite, anthracocali,[1] or sulphur; or again of cantharides, mezereum, viola tricolor, dulcamara, Roob Laffecteur,[2] or sirop de Larrey,[3] has been invariably unattended with the hoped-for success, and therefore we cannot recommend to any one the employment of these agents. On the other hand, arsenic has proved in our hands a useful internal remedy, though we cannot praise it to the same extent as do Hunt and Romberg; and we have also seen good effects produced by the preparations of mercury, of iodine, and of iron, by the oleum Morrhuæ, by the bitters, and the vegetable and mineral acids; and, lastly, by all those remedies which are indicated in particular cases by the presence of dyscrasiæ, and which would be prescribed equally, although the general affection were running its course unattended by any local disease of the skin.

Externally we make use of simple baths, warm or cold as required, and of douche baths, and vapour baths; or we add to these baths sulphur, potash, soap, common salt, or corrosive sublimate. Their temperature should be from 66°—100° F. (15°—30° R.); and their duration may vary from several days to a few minutes. Again we often employ emollient frictions with success, rubbing the whole skin or certain parts of it with oily or fatty substances (such as the ol. Amygdalæ, ol. Lini, ol. Olivæ, or ol. Jecoris aselli, or lard, suet, glycerine, or spermaceti). In other cases we add to these fatty matters various active substances, such as the preparations of mercury, zinc, lead, copper, iodine, arsenic, sulphur, &c., which remedies, so far as their solubility permits, may also be used in watery or alcoholic solutions. Our sheet anchor, which we invariably employ when we wish to effect either the rapid separation of the horny layer of the epidermis, or the removal of exudations infiltrating the cutis, or poured out beneath the cuticle, is always the soft or potash-soap. This we apply either alone, as in prurigo, eczema, psoriasis, ichthyosis, pityriasis, herpes tonsurans, favus, lupus, &c.; or we blend with it other medicinal agents, such as for example, sulphur in cases of scabies, tar in cases of eczema, &c.

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[1] A full account of the nature and therapeutical value of this remedy is given by Prof. Hebra, when speaking of the treatment of psoriasis.—[Ed.]

[2] "Rob de Laffecteur," is a secret remedy, of which the exact composition is unknown, but of which sarsaparilla is the principal ingredient. (V. Jourdan, 'Pharmacopée Universelle,' tom. ii, p. 419.)—[Ed.]

[3] This is another medicine of the same kind as the Roob Laffecteur.—[Ed.]

Moreover an important part of our therapeutical resources consists in the empyreumatic oils, which result from the dry distillation of certain kinds of wood. Thus we make use of the tar which comes from the beech *(Oleum empyreumat. fagi)*, of the *Oleum cadinum*, which is derived from the *Juniperus oxycedrus*, and of the *Oleum rusci*, which is obtained by distillation from the wood of the birch *(Betula alba)*, and which possesses the smell of Russia leather. The action of these is nearly identical; they differ only in their consistence, and in their smell.

For the removal from the skin of exudations, new growths, tumours and the like, caustics are employed. Passing over the actual cautery, of which, as of the knife, the application belongs to the domain of surgery, we will here concern ourselves only with the corrosives and escharotics (Aetzmittel), of which we shall refer particularly to those whose action we have ourselves thoroughly tested.

The concentrated mineral acids, namely the strong sulphuric, nitric and hydrochloric acids, can be applied in comparatively few cases. Not only is their action inconstant and therefore unreliable; but better effects are produced by other caustics. Moreover the disfiguring scars which follow the use of these acids often frustrate the purpose for which they were employed. The same may be said of butter of antimony, of chloride of zinc, and of other similar preparations. There are but few cases in which we use these substances, applying for example sulphuric acid in the removal of horny growths, and hydrochloric or nitric acid to destroy old exudations which have become organized. For experience has made us acquainted with better caustics, of which the effects can be more easily regulated, and which are followed merely by thin and smooth cicatrices. Among these we place in the foremost rank the nitrate of silver, which we use either as a solid, or in a concentrated solution *(Argent. nitrat.,—Aquæ destillatæ, partes æquales)*. To this substance we attach a great value, because every kind of new growth can be destroyed by it, without causing any further injury to the patient, and because any one, however unpractised, can apply it, without having any special experience in its use.

Next to this substance in importance is the caustic potass of the surgeons; this may be employed either in the form of sticks, or dissolved in two parts of water; but it demands more care in its application than the nitrate of silver; and it also causes a more extensive loss of substance, the limits of which cannot be so accurately predetermined. Moreover its use is often followed by thick and raised (wulstig) cicatrices.

Similar effects are also produced by the Vienna paste (Wiener Aetz-Pasta), consisting of equal parts of caustic potash and quicklime, made into a paste with alcohol at the time of its application, and left for ten or fifteen minutes in contact with the portion of skin which is to be destroyed. By the chloride of zinc paste of Canquoin (take of chloride of zinc one part, of flour four parts, of water q. s.), the same result is attained only after the lapse of four hours. And a longer time still (twenty-four hours or more) is required for the action of the paste recommended by Landolfi (consisting of chloride of bromine two drachms, of chloride of antimony, and chloride of zinc, of each a drachm and a half, besides chloride of gold *ad libitum*) of which the effects are however more severe. All these pastes char the organic tissues with which they are brought in contact; and they differ only in respect of the intensity of their action.

We may also attain similar results, though only after repeated applications, by using a [1]powder containing five grains of white arsenic, and fifteen grains of artificial cinnabar, mixed with two drachms of sugar, or with the same quantity of the unguentum rosatum, as may be most convenient.

Again, the solution and paste of Plenck, consisting of corrosive sublimate, camphor, carbonate of lead, alum, spirits of wine, and vinegar in equal proportions, has been employed with success in the treatment of various growths, especially those of syphilitic origin.

Sulphate of copper, alum, pulvis sabinæ frondum, corrosive sublimate, calomel, &c., are also well-known irritants, which either alone or in conjunction with other substances, may be used with advantage for the purpose of destroying, slowly, growths of various kinds.

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[1] This formula is founded upon the "Cosme'sche Pulver" of the Austrian Pharmacopœia, of which two ingredients are however omitted, namely, the *sanguis Draconis*, and the *cineres solearum ustarum* (the ashes formed by the incineration of the soles of boots and shoes).

Lastly, besides these active remedies, which are used externally or internally in different skin-affections, others which are indifferent and inert are also frequently prescribed, in those diseases whose course we cannot modify, and in which therefore the expectant method is attended with the best results. Thus, whether this or that remedy be used, is a matter of indifference, in the contagious exanthemata, as well as in all inflammatory affections of the skin which run an acute course, such as erythema, roseola, urticaria, erysipelas, herpes, miliaria, pemphigus acutus, &c. That mode of treatment which disturbs the patient least is, in these diseases, always the best.

IV.—*Classification.*

Our predecessors and contemporaries have endeavoured, according to very different principles of arrangement, or even without any such principles, to distribute cutaneous affections into classes, orders, and species. These attempts have been crowned with more or less success, and have obtained for a longer or shorter time, a partial or even a general acceptance among the profession. They have however possessed the defect of isolating the diseases of the skin too completely from those of the rest of the body; and therefore they have by no means fulfilled the requirements of a perfect dermatological system.

In passing in review the chief works on the dermatoses which have appeared from the most remote ages to the present time, we meet with so many systems of classification, that to describe them all would be judicious or even possible, only if we were writing a historical account of these diseases. But in order not to pass over what has been hitherto effected in this branch of medical science, and to make apparent our reasons for not giving the palm to any one of these systems, we may mention cursorily some of the more important of them.

For this purpose we may divide these schemes of classification into eight classes, founded on the nature of the principle which forms their basis, or on the other hand on the fact that their author held himself unfettered by any logical rules.

(1) The oldest forms of classification, those namely of Galen and Mercurialis, were based upon the seat of the affection, that is to say, upon its anatomical distribution; and by these writers, diseases of the skin were divided simply into those which attack the hairy scalp, and those which affect the rest of the surface. It surely needs no further description to show how defective and injudicious is so arbitrary a distinction.

(2) Those systems on the other hand are very tempting, which distribute skin-diseases into the local or idiopathic, and the constitutional, general, or symptomatic. Lorry was the first to introduce this principle of classification; but the same idea, though often under different names, has been elaborately worked out and improved by Dendy, Schönlein, Fuchs, Isensee, and others. But unfortunately, not only may the same cutaneous affection be produced by the most different causes, but the most varied diseases of the skin may also be caused by one and the same morbid agent. And it is not possible in every instance to draw from the form and appearance of a dermatosis, any certain inference as to its origin from a local or general cause.

(3) Next there are the anatomico-physiological systems, including those of Grimaud, Baker, Turner, and Craigie, in the last century, as well as the more modern classifications of Rosenbaum, Erasmus Wilson and others. These start from the opinion that it is possible to ascribe distinct names and characters to the affections of the different tissues which make up the skin; that is to say of the epidermis, of the corpus reticulare (Malpighii), of the papillæ, of the corium, and of the follicles, the vessels, the nerves, &c. But these writers forget that the integument is an organ, of which the component tissues are very rarely separately affected by disease, being on the contrary in most cases all penetrated by the morbid products, so that it is very often impossible to say which strata are more, and which less involved. These systems, therefore, are above all others, wanting in practical applicability; and hence they have found few adherents.

(4) No classifications, on the other hand, have met with so many followers, as those which have for their basis the external form of the disease. Such are those which were first established by Riolanus and Plenck, and which have since been modified by Willan, Bateman, Chiarugi, Biett, Cazenave and Schedel, Gibert

and Riecke, and others. But although the fundamental idea of these systems is at first sight very seductive, yet it can sustain no close criticism, and is far from being verified by practice. They have in fact been the great cause of the erroneous notion, that for the recognition of a cutaneous disease, it is sufficient to determine the primary efflorescence, which existed in that particular case. It was supposed that it is thus easy to fix upon the genus, to which the skin-affection belongs; and that there is then no difficulty in making out the name of the disease, by seeking for the special marks which characterise each species of the dermatoses. As though for the determination of a disease, a single character is sufficient, although it be torn from its connexion with the other symptoms with which it is associated, and although all the other appearances which present themselves in the course of the case are left unobserved, and the only point investigated is whether, at its commencement, the affection presented a macule, a papule, a vesicle, a bulla, a pustule, or some other of the primary forms of efflorescence! Such a method of diagnosis reminds one only of the empirical uroscopy of our fore-fathers and certain of our contemporaries. Moreover these classifications had the further disadvantage, that they isolated diseases of the skin from the doctrines of nosology in general, that they made the morbid processes which occur in the skin, appear quite different from those which affect other parts of the body, and that they thus called into existence those erroneous conceptions of cutaneous diseases, which, even at the present time, we meet with in every direction.

No doubt the founders of these dermatological systems had floating before their eyes the Linnean classification of plants. For they sought for the characters of their genera and species in certain among the appearances of the dermatoses (*Efflorescentiæ cutaneæ*, Hautblüthen) just as Linnæus employed for the same purpose the special parts of the flower (Blumen, Blüthen). But this attempt resulted in failure.

(5) Equally unsuccessful were those who, with Alibert at their head, and following De Candolle and Jussieu in botany, tried to introduce *natural systems*, as they were called, in dermatology. Their failure arose simply from the fact that a skin-disease does not form an individual, but merely consists of changes occurring in individual persons.

In forming a closer estimate of the two classifications of Alibert, it cannot but be seen that some among the groups of dermatoses may fairly lay claim to the title of natural families. Such are the contagious exanthemata (morbilli, scarlatina, variola), the syphilides, and the eczematous eruptions. But some only, not all affections of the skin admit of being thus arranged; the basis of classification is not the same in the different groups; and this system, even if it were practicable, would result in the isolation of dermatology. And for these reasons this method of classifying cutaneous diseases is devoid of all practical value.

(6) The course and duration of affections of the skin, their being acute or chronic, and their being attended or unattended with fever, gave to Derien and Frank a basis of arrangement, according to which they divided dermatoses into the acute and the chronic, into the exanthemata and the impetigines. Now there are certain cutaneous diseases, such as the contagious exanthemata, which are always acute; and there are others (prurigo, ichythyosis, elephantiasis, &c.), of which the course is invariably chronic. But there are also many affections of the integument, which sometimes terminate quickly, and yet are unaccompanied by fever; and there are others, of longer duration, in which feverish symptoms are always present. Nay even the same disease may run now an acute, now a chronic, course, as we see in the case of urticaria, eczema, and impetigo. Hence it is evident that, in this respect, cutaneous diseases form no exception to what we know of the affections of other parts of the human organism. In both cases the same complaint, without alteration of its essential nature, may be either acute or chronic, either attended or unattended with fever.

(7) Other authors in constructing their schemes of classification, seem to have been struck with the difficulty, not to say impossibility, of carrying out logically a division of the dermatoses on either a natural or an artificial basis. Hence they have contented themselves with arranging in groups those affections of the skin which were most closely allied to one another, with imposing on them the names of classes or orders, and with describing in succession, under these different heads, the corresponding diseases. It was in this way that the systems of Rayer, Plumbe, Devergie (his later method), Chausit (Cazenave), and others were drawn up.

(8) As curiosities we may mention, lastly, certain classifications which can be regarded only as examples of abortive attempts. Such

are the "Fluxions" of Baume *(Fluxions*—(a) *par cause externe, réfléchie, déplacée, excentrique,*—(b) *par diathèse, idiopathique, complexe, &c.);* Struve's division of the dermatoses into cryptogameæ and phanerogameæ; Devergie's earlier system, by which diseases of the skin were distributed into *maladies sécrétantes, et non sécrétantes;* and Upman's classification, according to the mutual presence as well as the mere nature of the elementary forms of eruption (as for example, into vesicles with, and vesicles without papules, &c.).

The inadequacy of the systems, which had up to that time been drawn up, and the want of uniformity between the method of classifying diseases of the skin, and that applied to affections of other parts of the body, induced me, as far back as the year 1844, to propose a division of the dermatoses on a pathologico-anatomical basis, in which I adhered for the most part to the doctrines taught by Rokitansky. I have as yet found no reason to repent of the scheme which I then[1] published, or to make any essential alterations in it. But I have had occasion to observe that it has been made use of, and modified by several authors in the erection of their systems. This is, indeed, easily explained by the consideration that they all have derived their knowledge from the same source as myself, namely, from Rokitansky.

I feel all the more satisfaction in being able to repeat, with but little alteration, the views which I advanced twelve years ago, because my experience has been greatly enlarged since that time, by the observation of more than 80,000 cases of cutaneous disease, and because my opinions with regard to certain of the dermatoses have in many respects undergone a change. Not that I wish to represent my system as free from defects, and to maintain that no better one can possibly be at any future time proposed. Its faults and deficiencies are only too well known to me. But, in my belief, it is superior to others in this, that though artificial, it is not too refined (künstliches doch kein gekünsteltes), and that though it is not a natural classification, it is yet in accordance with nature (obgleich kein natürliches doch ein naturgemässes). For it places together those diseases of the skin which resemble one another in their essential nature; and it makes no arbitrary separations between allied affections.

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[1] 'Zeitschrift der k. k. Gesellschaft der Aerzte,' ii Jahrg., 1 B. 1845, pp. 35, 143, 211.

In passing now to the description of our system, the first question to be answered is, why have we divided the diseases of the skin into twelve classes? We freely confess that we might have contented ourselves with ten or eleven, for the separation of the eighth from the ninth class may be termed arbitrary, and even incorrect, from the histological point of view. Again, in accordance with precedent, it was not necessary to have introduced the ulcers into dermatology, or at least not as a distinct class. But the proverb says, "*Qui bene distinguit bene docet;*" and from the practical point of view which I have always kept before me, it appeared to me to be judicious to adopt this classification; according to which all the diseases of the skin may be reduced to twelve divisions, classes, or families, as follows—

[1] CLASS I.—*Hyperæmiæ cutaneæ*—Hyperæmic affections of the skin.
II.—*Anæmiæ cutaneæ*—Anæmic affections of the skin.
III.—*Anomaliæ secretionis glandularum cutanearum*—Morbid conditions of the secretions of the cutaneous glands.
IV.—*Exudationes*—Exudations and exudative affections.
V.—*Hæmorrhagiæ cutaneæ*—Hæmorrhages.
VI.—*Hypertrophiæ*—Hypertrophies.
VII.—*Atrophiæ*—Atrophies.
VIII.—*Neoplasmata* (*Homœoplasiæ*)—Innocent growths.
IX.—*Pseudoplasmata* (*Heteroplasiæ*)—Malignant growths.
X.—*Ulcerationes*—Ulcers.
XI.—*Neuroses*—Neuroses.
XII.—*Parasitæ*—Parasites.

The characters belonging to these classes will be given hereafter, in describing the cutaneous affections which are included under each of them.

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[1] For the denomination of the first eleven classes, or families, I have employed the name of a pathological process, that is to say, of a thing which, being only a conception of the mind, and invisible, can be recognised only by its effects. On the other hand, the name of the twelfth class is derived from the cause of the diseases which belong to it, which cause is positive, and has a real existence. But although I must thus admit the logical defect in the principle of classification which I have adopted, yet I have not been able to remedy it, without risking the practical usefulness of the system.

CHAPTER III.

CLASS I.—HYPERÆMIÆ CUTANEÆ.

Diseases of the Skin, which arise from the presence of an excess of blood in the capillary vessels of the cutis.

By a state of excessive injection of the capillary vessels of the derma, and by the impeded circulation to which this condition gives rise, many morbid appearances are produced. These may often enough be observed in the living patient alone and unattended with any demonstrable exudation or hæmorrhage, so that no facts, either anatomical or physiological, are opposed to the association of these diseases into a single class, and the description of them apart from other pathological changes.

The following characters belong to the cutaneous hyperæmiæ in general.

a. Redness of the skin.—This presents every shade, from a bright red or rose colour to a dark, bluish-red. But it always yields to the application of pressure; and when this is removed, the normal colour of the skin is seen, though only for an instant, after which the red colour quickly re-appears.

b. Swelling.—This is often imperceptible, and is seldom considerable.

c. The temperature of the skin is not demonstrably altered in conditions of slight hyperæmia, but in severe instances of this affection it presents deviations from the norm, appreciable both by the touch, and also by the thermometer.

d. Subjective sensations.—The patient either feels no abnormal sensation, or merely a slight itching or burning.

e. The seat of the affection is either in the papillæ alone, which are extremely vascular, or also in the deeper capillary net-work of the cutis, or lastly, in the capillary vessels which supply the hair sacs and glandular structures.

f. As regards their *form,* these rashes consist for the most part only of maculæ, which are either circumscribed and of varied pattern (figurirt), or diffused; but wheals are also sometimes present.

g. Their *course* is generally acute, and often of a definite type; in some cases it is chronic, from the occurrence of repeated relapses.

h. Their *duration* is from a few minutes to several days.

i. Secondary or consecutive appearances are, in these affections, generally wanting, but in some cases pigmentation of the epidermis, and in others slight desquamation (defurfuration) is observed.

The immediate cause of an hyperæmia must be either an increased flow of blood to the part or an obstruction to the circulation, from stasis of the blood. Since each of these conditions may occur in the skin, the generally adopted division of hyperæmiæ into the simple or active, and the passive, mechanical or hypostatic, is necessary in dermatology.

A.—Active Hyperæmiæ.

Symptoms.—A colour varying in tint from a pale rose to a bright blood-red, disappearing beneath the pressure of the finger; no perceptible swelling; elevation of temperature; sensations of slight itching or burning: such are the phenomena which indicate these forms of hyperæmia.

Subdivisions.—We distinguish an idiopathic from a symptomatic hyperæmia. In the former case the affection is purely local, a skin disease in the strictest sense (dermatonose, *Fuchs*). In the latter case it is produced by disease of other parts of the body, attacking also the skin (dermapostase, *Fuchs*).

A. IDIOPATHIC ACTIVE HYPERÆMIÆ.

Under this head we shall describe all those rashes which arise from injuries affecting directly the cutaneous surface, and in which nothing occurs beyond the accumulation of blood in the part, or in which at least the hyperæmia is the first and most striking morbid change.

Since the name erythema has always been given to all affections in which the skin assumes a diffuse red colour, we will make use of the same expression. We shall take leave, however, to add to it the epithet "*congestivum,*" in order to indicate more precisely the form which is to be here described, for we shall hereafter, among the exudative processes, have to speak of an *erythema exudativum.*

ERYTHEMA CONGESTIVUM IDIOPATHICUM.

The *erythema congestivum* is characterised by the symptoms which belong to the active hyperæmiæ of the skin, and by the absence of all phenomena pointing to disease of any other part of the organism. The extent and pattern (Zeichnung) of this rash vary according to the kind and degree of the injurious influence which produced it, and to the susceptibility of the patient.

It would, of course, lead us too far from our immediate purpose if we were to attempt to enumerate all the causes which may give rise to an active idiopathic hyperæmia in the form of *erythema congestivum.* We must therefore content ourselves with mentioning those forms of the affection only which are either most frequently the subject of observation, or of which a knowledge is necessary, for the discrimination of other more severe skin diseases, in which they are merely temporary phenomena (Uebergangserscheinungen).

(1.) *Erythema Traumaticum.*

The pressure which the skin undergoes from tightly fitting clothes or bandages, from the various postures of the body, and from rubbing or scratching, causes a reddening of the parts affected, of which the pattern varies with the form of the body which produced it. This redness, however, quickly disappears when the pressure is removed, and leaves behind no trace of its presence, unless the operation of the offending agent was either unusually intense or of long duration. Thus, we see red spots of different forms, which are produced in men] by tightly fastened belts, in women by stays, tight bands, and closely fitting garments, and in both sexes the same thing is observed at those points which bear the pressure of trusses, or of their pads or straps. Similar red patches are found over the sacrum or the ischial tuberosities, after lying down or sitting upright. Again, in those individuals who scratch themselves with their finger-nails, or whose skin is rubbed in other ways, we see reddenings of the skin, which are of greater or less extent, or may take the form of striæ: and so long as these appearances are of short duration only, and disappear totally when the pressure is removed, they are the result merely of hyperæmia of the capillary vessels of the papillæ.

If, however, the same irritant acts upon the skin repeatedly or continuously, the hyperæmia may at length amount to stasis and exudation, or, in other instances, may lead to hæmorrhage. In both cases, other cutaneous affections are called forth, which will be described in the proper place.

The knowledge of these appearances is necessary in itself, so that in practice they may be rightly understood, and that more importance may not be attached to them, than they deserve. Another circumstance also must always be remembered, namely, that portions of the skin which are the seat of this kind of hyperæmia, even to a trifling extent, are often observed to be specially affected by the exudative cutaneous diseases. Thus when variola breaks out in women, the pustules are far more numerous round the middle of the body, and above the calves, where tightly-fastened belts and garters are worn, than on parts of the skin which have not been exposed to pressure. So again, if persons whose occupation keeps them sitting continuously on hard stools or benches, become affected with scabies, there are always found on the buttocks over the ischial tuberosities, not only numerous cuniculi, but also tubercles, vesicles and pustules. Other instances of the same kind might be cited.

(2.) *Erythema Caloricum.*

Rashes, which result from the action of heat or cold upon the skin, are to be regarded as simple hyperæmiæ, so long as, beyond the change of colour, no other deviations from the normal state make their appearance. But when, in addition, the existence of inflammatory products in the part is shown by the presence of swelling, or by the formation of vesicles or bullæ, the affection is then one of a higher degree and belongs to the domain of the exudative processes.

We may quote as an example of hyperæmic *erythema caloricum* the reddening of the surface which is produced by warm or cold air, and by hot or cold baths. When the operation of these agents is withdrawn, the colour disappears, leaving behind it no mark of its presence, in the form of either desquamation or pigmentation.

(3.) *Erythema ab Acribus, seu Venenatum.*

As is well known, we possess several substances, which by their chemical properties have an irritant action upon the skin, and produce, as their first effect, an engorgement of the capillaries of the cutis, in other words an hyperæmic erythema. Under the continued operation of these agents, however, inflammatory products are poured out, both into the cutis, thus giving rise to an exudative erythema, and also beneath the epidermis, so as to form papules, vesicles, or bullæ.

We are familiar with certain of these rashes produced by various mineral, vegetable, and animal matters; for example, by the *Hepar sulphuris*, by the *Semina sinapis*, and by the hairs of the caterpillar of the *Gastropacha processionea*. The form and extent of these eruptions depend on the nature of the substance which caused them and the duration of its action, and they are generally confined to the part of the skin with which it came into direct contact. But examples are by no means wanting in which an irritant acting only upon a small circumscribed spot, has given rise to a widely diffused, and even universal redness of the surface.

B. SYMPTOMATIC ACTIVE HYPERÆMIÆ.

In the course of general diseases of various kinds, both in those which are attended with fever and those in which there is none, we meet with rashes, of which these affections are evidently the cause. These appearances may either precede the principal malady, as in the case of the so-called *roseola variolosa;* or they may accompany it, as does the *strophulus volaticus;* or, lastly, they may show themselves at a time when the primary disease is undergoing involution, as is the case with the *roseola vaccina,* and the *roseola cholerica.* Even in healthy persons similar rashes are seen as a result of nervous influence or of mental disorders. Who is not acquainted with the flush, which generally affects only the cheeks, but which frequently covers all the face and neck, and even, in exceptional cases, the whole surface of the body, and which, though termed the blush of shame (Schamröthe), is caused quite as often by anger, vexation, or confusion?

Now although some general affections are, more frequently than others, accompanied by such erythematous rashes on the skin, yet the connexion between the disease and the eruption is not so close that the one cannot be found without the other. Thus we find typhus occurring without, as well as with, roseola. The efflorescence then is not an indispensable part of the phenomena presented by the general disease, but may be present or absent without affecting the essential characters of the latter. Indeed the course of the complaint is not even to an important extent modified by the appearance of these rashes, and it is only in certain cases that their presence is of any consequence even in relation to prognosis.

An acquaintance with these forms of erythemata has however a negative value. It saves one from the common mistake of diagnosing every febrile complaint, attended with a reddening of the skin, as one of the contagious exanthemata (scarlatina, morbilli). Such conclusions, when made too hastily, often lead to disagreeable consequences.

In reference to these symptomatic erythemata, we might content ourselves with what we have already said, and group them together under the name of *erythema fugax*, which is applied to them in medical works. But as some general diseases are more frequently than others attended with such rashes, and as in dermatological works many terms are mentioned, which would naturally be placed in this part of our system, it will be well for us to enumerate them in this place.

Under the name *roseola* (*rosalia*, *rubeola*, rose-rash, Rötheln, Ritteln, Wiebeln, Feuermasern, der rothe Hund), is understood by Willan[1] a "rose-coloured efflorescence, variously figured, without wheals or papules, and not contagious."

Such is Willan's definition of roseola, which he divides into a *roseola æstiva*, *autumnalis*, *annulata*, *infantilis*, *variolosa*, *vaccina*, and *miliaris*. He mentions in conclusion another form also as occurring in typhus (contagious nervous fever). Other authors, such as Rayer,[2] Alibert, and Fuchs,[3] have thought fit to enumerate, besides these, other varieties of this affection, and describe, besides those already given, a *roseola febrilis*, *rheumatica*, *cholerica*, *idiopathica et symptomatica*, *saltans*, &c. In addition to these numerous species of roseola, there are also several other names which have been applied by these and other dermatologists to symptomatic hyperæmiæ of the skin. Thus the ***strophulus volaticus*** and ***intertinctus,*** the ***Feu des Dents*** of Willan, the ***Nirlus*** of William Bat, and of Alibert, the ***Feu rouge*** of the French writers, and the "Red Gown" and "Wildfire Rash" of English physicians are clearly nothing more than transient forms of erythema, which may accompany now this, and now that complaint.

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[1] 'On Cutaneous Diseases,' by Robert Willan, M.D., 1808, vol. i, p. 433.

[2] 'A Theoretical and Practical Treatise on Diseases of the Skin.' By P. Rayer, M.D., 2nd Edition, translated by D. Willis, 1835, p. 192.

[3] 'Die krankhaften Veränderungen der Haut, &c.' Von C. H. Fuchs, Göttingen, 1840, pp. 177, 927, 1024, and 1065.

I think that I need devote a special description only to the following varieties of erythema and roseola.

(1.) *Erythema Infantile, seu Roseola Infantilis.*

In the infantile organism, as is well known, all the manifestations of disease display a severity, which is not observed in the case of adults. In fact quite trifling disorders of the health are in children often attended with severe (stürmisch) symptoms. Thus as a result of the so-called catarrhal, rheumatic, or gastric fever, of the process of dentition, of the presence of worms and so forth, we meet in these little patients with rashes, which are sometimes diffused over large tracts of the skin and thus resemble a scarlatina, whereas in other cases they present distinct maculæ, and then simulate the aspect of measles.

Those, therefore, who hold the opinion that, for the diagnosis of the contagious exanthemata, it is sufficient to attend to the appearances presented by the skin, will often be led into the error of regarding these transient rashes as an evidence of measles or scarlatina. But observation of the further course of the case will soon teach them the contrary; for in the exanthematous fevers the eruption has a definite and longer duration, whereas, if it be an erythema or a roseola, it vanishes as rapidly as it appeared, lasting a few hours only, or at most a day. Moreover, these forms of rash do not, either when they break out, or while they are disappearing, present that regular mode of development and of retrogression which we are accustomed to see in rubeola and in scarlet fever. Again, those symptoms are absent which, being constantly present in the exanthemata, form part of their essential characters. I refer to the severe catarrhal disease of the air-passages in measles, and the more or less intense inflammatory affection of the pharynx in scarlatina. A further aid in the diagnosis of the *erythema infantile* or *roseola infantilis* is afforded by the circumstance that when this rash disappears it leaves behind it neither deposition of pigment nor desquamation of the epidermis.

As for the subjective symptoms of these affections, it is to be noted that the patients frequently speak of a feeling of increased heat, and of slight itching or pricking. These sensations are, however, of but short duration, coming to an end as soon as the objective symptoms disappear.

The *roseola infantilis,* then, according to the description we have given, is no independent malady, and can only be regarded as a symptom accompanying other diseases. It may show itself either in the course of slight affections, which always terminate in recovery, or in the more dangerous and fatal general disorders. Moreover, it cannot be looked on as either a favorable or an unfavorable sign, in reference to the probable issue of the disease which causes it. Hence this variety of erythema or roseola possesses no special importance, so far as prognosis is concerned, nor is there anything worthy of mention in regard to its treatment. The expectant method, or the employment of inert substances, is fairly applicable to this affection.

(2.) *Erythema Variolosum, Roseola Variolosa.*

During the preliminary stage of variola, before the appearance of the eruption, and generally on the second day of the disease, it is not uncommon either to find the whole surface of the body covered by a diffused rash (*erythema*), or to observe scattered spots (*roseola*) of a bright red colour, and in size between a lentil and a finger-nail, which appear first on the face, and afterwards on other parts of the body. The duration of this efflorescence is very short. Within twelve or twenty-four hours the true variolous eruption gradually makes its appearance, and the earlier rash fades away as the characteristic papules become fully developed. The diagnosis of a *roseola variolosa,* or of an *erythema variolosum,* is of course impossible at the commencement of the affection, and can be made only at a later period, when the ordinary smallpox efflorescence has shown itself. The occurrence of this erythema has thus frequently been the cause of mistakes; for, relying on the presence of a red rash, accompanied with febrile disturbance, medical men have believed that they had to do with measles, in cases in which all the characters of variola have soon afterwards manifested themselves. A similar explanation may be given of the statement made by certain writers, that morbilli, scarlatina, and variola sometimes occur in combination, attacking simultaneously the same patient, an opinion which arose from an erroneous interpretation of this form of erythema or roseola.

I cannot refrain from availing myself of this opportunity to throw my authority, based on the experience of many thousand cases of disease, into the same scale with that of those authors who deny that more than one of the exanthemata can be present at the same time. I have, of course, seen one of these diseases (such as variola) appear after the complete termination, that is, at the end of the stage of desquamation, of another exanthem (as, for example, morbilli). But, according to certain authors, two exanthemata (morbilli and variola, scarlatina and variola, or even scarlatina and morbilli) may exist at the same time and in the same patient. Of this I have never been able to assure myself, and, in my opinion, no proof of it is to be obtained.

Another peculiar appearance, which precedes the eruption of variola, must also be mentioned, although the similarity between its course and that of the affections which we have been describing is the only reason for introducing it in this place.

Quite at the beginning of the preliminary febrile symptoms of smallpox there is in some cases observed on the abdomen, and on the inner sides of the thighs, a rash, which is sometimes a mere hyperæmia, and disappears beneath the pressure of the finger, but which is, in other instances, of an hæmorrhagic nature, and then persists without change.

This rash invariably remains confined to a space bounded above by an imaginary line drawn transversely across the umbilicus, at the sides by the lumbar regions, and below by a line traced across both thighs, about three fingers' breadths above the knees. It also extends further outwards in the inguinal region than lower down towards the knees; so that, when the thighs are pressed together, the area occupied by the rash forms a triangle, with its apex directed downwards. Some two or three days after its appearance the true smallpox eruption begins. This, as in other cases, gradually spreads over the whole surface, except that it leaves untouched the tracts already mentioned on the abdomen and thighs. Indeed, in proportion as the development of the variolous vesicles advances, the intensity of the rash observed on these parts diminishes;

so that, by the time suppuration begins, these regions have either become quite pale or present merely a deposit of pigment. In either case they are free from the slightest trace of the smallpox efflorescence.

This erythema may show itself at any time, and affects men as well as women. But it is much more common in some epidemics of variola than in others, and it is also far more frequently observed in the female than in the male sex.

In relation to prognosis, again, the appearance of this rash upon the abdomen of a smallpox patient is by no means necessarily to be regarded as an unfavorable sign.

These cases do, however, more often terminate badly, than in recovery, and particularly when the affection passes beyond mere hyperæmia into hæmorrhage, when, in fact, a *purpura* rather than an *erythema* shows itself on the abdomen and on the thighs in the *stadium prodromorum* of variola.

(3.) *Roseola Vaccina.*

It is well known that inoculation, either with variolous matter (the contents of the pustules of *variola vera*) or with vaccine lymph (taken from the eruption found on the udders of the cow, or from the vesicles of a patient previously vaccinated), gives rise to a general disease. This often manifests itself merely by the reproduction of vesicles similar to those which yielded the matter for inoculation. Sometimes, however, there are also produced affections of other parts of the skin, of which the most frequent is the appearance of simple, red, distinct spots. This rash, which is the *roseola vaccina,* shows itself between the third and the eighteenth day after inoculation, generally first upon the arms, and the size of the maculæ varies from that of a fourpenny-piece to that of the palm of the hand. It often persists only during a few hours, and rarely lasts more than one day, after which it disappears without leaving behind it either deposit of pigment or desquamation. A few cases do, indeed, occur in which this rash spreads over the adjacent parts of the skin, and thus gives rise to a diffused erythema; but these are exceptions. Beyond slight attacks of pyrexia, which are of short duration, no disturbance of the health of the patient is generally observed, and, therefore, any medical treatment appears to be superfluous.

It is a different affair, however, when these affections, consequent on inoculation, attain a higher degree of intensity, and when the lymphangioitis, which was the cause of the erythema or the roseola, passes into *dermatitis*. We then meet with erysipelas, inflammation of the subcutaneous areolar tissue, abscesses, furuncles, and even gangrene, which not unfrequently imperil the life of the patient, and are always attended by a number of severe symptoms—symptoms which, though they may be sometimes connected with it, are generally absent in cases of the simple roseola.

There are also other appearances which sometimes present themselves on the skin after vaccination, and which, in their intensity and importance, hold an intermediate place between the roseola vaccina and the more severe forms of inflammation of the skin. These consist in the formation of papules, wheals, vesicles and bullæ, and are described by certain authors[1] as *lichen, urticaria, eczema,* and *pemphigus vaccinatorum.* Such names are not, however, in my opinion, rightly applied to these affections, for in dermatology, as in the other branches of medicine, the distinction between a disease (Krankheit) and a symptom of disease (Krankheitserscheinung) should always be observed.

As we have already stated, in giving the general characters of the active hyperæmiæ, all the skin affections which are ranged under this head run an acute course, and are of short duration. Their cause varies in different cases, and there can therefore be no question of any special treatment for the forms of erythema and roseola which have been described in this place. We must confine ourselves to remedying the disease which gave rise to the rash, according to the indications which present themselves in each particular case. The erythema or roseola, *as a skin-disease,* calls for no treatment.

Among the *hyperæmic erythemata,* and *roseolæ,* I have of course been able to introduce those forms only, which in the majority of cases arise merely from an excessive injection of the cutaneous capillaries. There are however other varieties which are caused by exudative processes; such are the *roseola typhosa, cholerica, &c.,* and the *erythema papulatum, nodosum, &c.* These are placed by Willan in the same class with the others, but their proper position is obviously not here, but among the acute exudative processes of which the skin is the seat.

It is, I think, scarcely necessary for me to justify this division of the skin-affections, which were grouped together by Willan and by many of his followers, under the names *Roseola* and *Erythema*. In the classification of the dermatoses, I have started from principles which are entirely different from those of Willan, and with these principles the arrangement of individual diseases must of course be made to accord. Indeed when I thus distinguish the forms of erythema and roseola, caused by exudation, from those which are merely hyperæmic, I am not, in my own opinion, making a division between diseases of the same kind; I am rather separating from one another cutaneous affections, which arise by entirely different morbid processes, and I am classifying together those of which the origin is the same.

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[1] 'Alois Bednar, die Krankheiten der Neugebornen und Säuglinge, &c.,' Vienna, Gerold, 1853. (iv Theil, s. 127.)

B.—Passive Hyperæmiæ.

Symptoms.—A bluish-red (livid) or bluish-black coloration of the skin, disappearing under pressure; swelling, which is but slight unless œdema be also present; diminished warmth of the surface: these are the symptoms of the so-called passive hyperæmiæ, which result from stasis of the blood (Blutstauung).

Subdivisions.—As in the active hyperæmiæ, so also in the passive, we distinguish the idiopathic forms from those which are symptomatic.

A. IDIOPATHIC PASSIVE HYPERÆMIÆ.

We have seen that irritants of various kinds, if their action upon the skin's surface be transient and not severe, lead to the production of the active hyperæmiæ, and the same agents may also give rise to the passive forms of congestion, particularly if their operation be somewhat prolonged and be exerted on the larger venous trunks. Thus pressure upon any part of the skin, if it be not too severe or too long continued, will be followed by the appearance of a bright rose-tint of the surface (that is to say of an active hyperæmic state); whereas even a moderate pressure, applied directly over one of the larger superficial veins, will cause a bluish-red tint of the distal parts, or will, in other words, produce a passive hyperæmia.

These local blue colorations of the skin require to be distinguished from those which arise from internal causes, and are hence for the most part universal. These last bear, as is well known, the name of *cyanosis* (Blausucht); and we will therefore give to the former variety the names *livor cutis, livedo* (Blauung), and will divide them into a *livedo mechanica,* and a *livedo calorica.*

(1.) *Livedo Mechanica.—Blueness of the skin, produced by mechanical causes.*

This form of affection is characterised by a coloration of the skin, which varies from a leaden-grey to a reddish-blue, or bluish-black tint. It is generally confined to circumscribed parts of the surface, is observed chiefly on the extremities, and is associated with more or less œdema. When the cause which gave rise to it is removed, it gradually becomes less perceptible, and finally disappears without producing any further effects. Diminished mobility of the parts in which the circulation is thus retarded, as well as impairment of sensation, or feelings of formication and itching are symptoms which sometimes accompany this affection.

We see these affections produced in every-day life, chiefly by the action of tightly fitting articles of clothing, bandages or garters, which surround an extremity, and compress it, so that the circulation through the superficial veins is retarded. The blood is thus gradually made to accumulate in the smaller veins; its flow through the capillaries, and their functions are consequently interfered with, and so the condition, already described, is produced.

As is well-known, before proceeding to perform venesection, it is usual to compress one of the larger superficial veins, and under these circumstances, if the bandage be too tight or be left on too long, we have an opportunity of observing this form of coloration of the skin.

Pressure may however also be exerted upon the cutaneous veins by disease seated in the subjacent soft parts, or in the bone, as for example, by tumours, and in these cases the appearances in the skin will be the same. Moreover obstruction of the circulation, and accumulation of the blood in the distal parts of the body, may also be the result of diseases of the veins themselves, such as defects in their valves, paralysis, or a varicose condition. We see this especially in the legs of those persons who are frequently compelled to stand continuously for a long time. In old people, again, we meet with lividity of the hands and feet, apart from other disease; and it is then the result, as would appear, of deficient innervation.

(2.) *Livedo Calorica.—Blueness of the skin, produced by the influence of cold.*

Daily experience teaches that the skin of some people is extremely sensitive to cold. If these persons undress in a room at a temperature of 63°—68° F., and still more, if they remain for some time exposed to such a temperature in a state of partial or complete nudity, their veins become injected to so great a degree, that the plexuses which these form, can be seen exactly as on the skin of a corpse (sogenannte Todtenflecke). Under such circumstances, the surface presents bluish-red or dark-blue lines, of about two centimetres in width, communicating together, and forming circles or various serpentine figures. These appearances are observed chiefly on the skin of the extremities, and to a less extent on that of the trunk. They yield completely to the pressure of the finger, but quickly return when it is removed; and it is only when the patient has dressed and become warm that they finally disappear. This effect of cold is seen more often in young subjects than in those who are older, and occurs especially in the female sex.

Mention must also be made in this place of the bluish-red or dark-blue coloration of the skin which is observed in some persons on the hands and on the face, and particularly on the nose, and cheeks, after exposure for a short time to the influence of the more severe degrees of cold. The blue colour persists however only so long as the action of the cold continues, changing immediately to a natural or a bright-red tint, under the influence of a higher temperature, and this fact and the absence of swelling, sufficiently distinguish these appearances from chilblains (*Perniones*, Frostbeulen).

I cannot refrain from mentioning here a condition which is observed in some cases on the skin of the extremities, and chiefly on the hands, as an effect of cold. It consists in the appearance of distinct spots of a vermilion-red colour, seated upon a more or less livid base, and in size between a lentil and a fourpenny-piece. These red spots, combined with the blue colour of the rest of the skin, give rise to a marbled appearance, and remind one of the aspect presented by the lungs of an infant, who has breathed only for a short time, and imperfectly. Can these vermilion-red spots on the skin possibly owe their origin to a similar process, to a cutaneous respiration? We will leave this question to be answered by the physiologists, and will content ourselves with alluding to the fact.

Remark. — Although the passive hyperæmiæ, which have been hitherto described, seem in themselves to have but little importance among the appearances caused in the skin by disease, yet an acquaintance with them is in some cases of no little moment. It enables us, in fact, to explain correctly many anomalous and exceptional conditions presented by cutaneous diseases, with the normal appearance of which we are familiar. We can thus understand how affections which are generally attended with a bright red coloration of the skin, may sometimes present a bluish-red hue, without change in their essential nature. We shall also be able to avoid the error (by which the study of cutaneous diseases has been made so complicated) of seeing in every different coloration of a familiar dermatosis a specimen of a new and distinct variety, and of immediately creating for it a new specific appellation. Thus, for example, Willan, under the name *lepra nigricans*, has figured and described a disease of the lower extremities, which is evidently nothing more than a common psoriasis, seated on the legs of a person affected with varices of the superficial veins, and in which the usual bright-red colour was changed into a bluish-red or blackish-blue by the passive or mechanical hyperæmia.

B. SYMPTOMATIC PASSIVE HYPERÆMIÆ.

The blue discolorations of the skin which come under this head are distinguished chiefly by the following peculiarities. They mostly affect large portions of the surface, and are seldom confined to any particular region. They have a much darker tint, and are generally of much longer duration than the idiopathic passive hyperæmiæ; indeed, they may persist during the whole life of the patient. They are also connected with affections which cause, either permanently, or at least for a time, a disturbance of the general health.

The attempt has been made to divide these affections into two varieties, according as the cause of the malady lies in the organs of circulation, or in those of respiration. In the first case the disease has been termed *cyanosis*, or *morbus cæruleus* (Blausucht); in the second, *pneumatelektasis* (Sticksucht).

This classification has, however, found but few followers. The changes in the skin are in each case the same, and the determining cause can seldom, either during life or in the dead body, be so isolated as to justify the setting up of this distinction between the form of this affection due to cardiac, and that ascribed to pulmonary disease. Hence the name *cyanosis* may be correctly applied to any blue discoloration of the skin, which is caused by changes in the circulation, and all these terms, *cyanosis, morbus cæruleus, cyanopathia, atelectasia, anæmatosis, maladie bleue* (die blaue Krankheit, Blausucht, Sticksucht), are to be regarded as synonymous.

Our forefathers looked on cyanosis as a peculiar and independent disease, of which the immediate cause was either the mixing of arterial and venous blood within the walls of the vessels, or some impediment to the decarbonization of the venous blood.[1] Even in more modern works[2] we find the view expressed that the blood assumes a "venous, cyanotic" appearance, when it does not meet in due proportion with pure atmospheric air. These writers based their opinion partly on the results of post-mortem examinations of the bodies of those who are stated to have fallen victims to cyanosis. Various congenital defects were, in fact, found in these cases: patency of the *foramen ovale* or *ductus Botalli;* perforated or defective *septum ventriculorum;* hearts having but one ventricle; absence, narrowing, or closure of the pulmonary artery or aorta; abnormal origin of the great vessels. The same view was, however, also supported by cases of cyanosis, in which paroxysmal attacks of dyspnœa occurred. These attacks, being followed by loss of consciousness, convulsions, and foaming at the mouth, as well as by blueness of the skin, affecting first the face, and particularly the lips, and afterwards gradually involving the whole surface, led naturally to the inference that the disease was one of a peculiar nature.

On the other hand, Rokitansky[3] has fully proved, in detail, what was before taught in part by Morgagni, Ferrus, Louis, and others, that the *cause of cyanosis always lies in the impeded passage of venous blood into the heart,* by which a condition of stasis and an engorgement of the capillaries are produced. Hence both the duration of the cyanosis and the degree to which it will be attended by other symptoms of disease will vary with the causes of the obstruction to the venous blood. Among these may be the following:—Organic changes in the heart, or in the large vessels; as, for example, extreme hypertrophy and dilatation of the heart with valvular disease, want of correspondence in size between the heart and the large vessels, &c.; pulmonary affections, such as catarrh, emphysema, bronchiectasis, pneumonia, compression of the lungs by pleuritic exudation, &c., and, lastly, conditions of perverted innervation, which are generally dependent on diseases of the brain.

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[1] 'Beobachtungen und anatomisch path. Erörterungen über die Blausucht:' Von Dr. M. Aberle, Prof. d. Anatomie zu Salzburg, in den Med. Jahrb. des [illegible] Staates, Band 49, Neue Folge Band 37, Wien, 1844, pp. 1, 142.

[2] 'Handbuch der Path. Anatomie.' Von Prof. Dr. C. E. Bock. Leipzig, [illegible]

[3] 'Handbuch der Path. Anatomie,' ii B. Wien, 1844, p. 511.

The morbid appearances in the skin, resulting from these causes, are as follows:—The surface has a leaden-gray, or even a bluish-black hue, and this is most marked at those parts (such as the lips, gums, cheeks, fingers, toes, &c.) which in healthy persons are of a peculiarly bright or blood-red colour. The temperature of the skin is lowered; thus the thermometer sank in the hand of a cyanotic patient of F. Nasse[1] to 79·2° Fahr. (21° R.); and this is observed chiefly at the distal parts of the body, such as the hands, feet, and face. Cold sweats also break out in these patients, especially on the palms of the hands and the soles of the feet, and lastly, dropsical swellings make their appearance.

These symptoms are either constant, merely becoming aggravated from time to time as fresh attacks, attended by dyspnœa, set in; or they appear only in paroxysms, after which they vanish without leaving behind them any traces of their presence.

There can obviously be no question of the treatment of cyanosis, except in so far as we are able to cope with the morbid conditions which give rise to it.

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[1] 'Reil's Archiv,' B. x, p. 285.

CHAPTER IV.

CLASS II.—ANÆMIÆ CUTANEÆ.

Morbid appearances of the Skin caused by deficiency of Blood in the cutaneous Capillaries.

ALTHOUGH no *disease of the skin,* in the ordinary sense of the word, arises from deficiency in its blood-supply, yet an acquaintance with the appearances which are caused by this condition is of great importance, because it aids in the recognition of many affections of the organism in general, and also because it leads to a correct interpretation of certain changes, which an anæmic state of the system may produce in the aspect of a pre-existing dermatonosis.

The appearances produced by anæmia of the skin are not in all cases the same. Thus:

a. The colour of the skin will vary with the degree of physiological pigmentation, and with the cause which gave rise to the anæmia. If the integument contains but little pigment it will assume a waxy appearance, especially if the loss of blood be sudden; whereas, when the deficient blood-supply arises gradually, and is the result of previous wasting diseases, the skin will acquire a dirty, pale-yellow tint.

On the other hand, parts of the integument which previously contained excess of pigment, and, in the coloured races of mankind the whole surface of the body, are made by anæmia, not paler, but darker in colour. This may be attributed to the approximation of the molecules of pigment in the epidermis, caused by the collapse of the empty blood-vessels.

b. In reference to the natural turgidity and fulness of the skin, caused by the infiltration of its tissue with fluid (Durchfeuchtung, Wassergehalt), it may be remarked that this condition is diminished in anæmia, both from the collapse of the vessels, and from the absorption of the interstitial moisture, and that a change in the aspect of the countenance is thereby produced.

c. The temperature of the surface falls when anæmia is rapidly produced, but returns to the usual height if this condition persists for some time; and if a state of nervous excitement should become developed in consequence of repeated hæmorrhages, the temperature may even rise some degrees above the normal level.[1]

d. The chief subjective symptom is a diminution of sensibility, sometimes amounting to anæsthesia. Some patients also suffer from cold shivering and shuddering, and others complain of a feeling of pricking, and of increased warmth of the skin.

e. The seat of the disease can, of course, be looked for only in the vascular apparatus of the integument.

f. No particular eruptions appear as a result of deficient blood-supply to the skin; but a profuse cold sweat may mostly be observed on the pale, colourless surface.

g. The course and duration of anæmia of the skin are various; it may be acute and transitory, or chronic and of long persistence.

h. Secondary appearances manifest themselves on the skin of anæmic patients only when the morbid state has lasted for a considerable time. It may then be observed that the horny structures, such as the epidermis, hair, and nails, which are normally permeated by fluid blastema, have become drier and more brittle, while emaciation, and a peculiar loose state of the integument, are also produced by the absorption of the fat from the subcutaneous areolar tissue. Again, the deficient blood-supply to the skin causes not merely a pallor of the surface, but also a diminution, or a complete drying up of the secretions and of any exudations which were previously being poured out. Lastly, in consequence of the smaller amount of fluid permeating the skin, any parts of it which are hypertrophied, and also all tumours or new growths decrease in size.

Anæmia of the skin may be divided naturally into two varieties, according to its cause; one form of it being produced by defective blood-supply, and another by perverted innervation.

A.—ANÆMIA OF THE SKIN, FROM ABSOLUTE WANT OF BLOOD.

There are, as is well known, two ways in which the quantity of blood in the body may be diminished; this effect being sometimes

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[1] 'Observations on Bloodletting,' by Marshall Hall, M.D., 1836, p. 31.

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the result of hæmorrhage, sometimes of certain states of disease, attended by a slow wasting of the vital fluid.

A. ANÆMIA ARISING FROM HÆMORRHAGE.

Loss of blood, from injury to or rupture of the larger vessels, is, usually, quickly followed by a condition of general anæmia. This manifests itself for the most part, first by pallor of the face, and especially of the lips, by coldness of the extremities, and cold sweats. These symptoms are afterwards accompanied by signs of depression of the nervous system—such as the appearance of mists before the eyes, failing of the senses, trembling, loss of power to maintain the body erect, nausea, sickness, &c. These phenomena constitute the condition of *syncope* (Ohnmacht); which, if the loss of blood continues, and if the nervous centres become paralysed, passes into one of apparent death (Scheintod), and ultimately into death itself—in which case the appearance of the skin remains unchanged in the dead body. The expression "cadaveric hue," (Leichenblässe, Cadaveröses Aussehen, Todtenfarbe, &c.) has, in fact, partially lost its original meaning, and serves likewise for the description of the appearances produced in the living skin by anæmia. Besides the pallor of the lips and mucous membranes generally, and of the skin (the first striking symptom of syncope), the anæmic condition of the surface is further shown by the fact, that no blood flows from recent wounds so long as the patient is in a fainting state, although they may have bled freely before and may again bleed afterwards.

B. ANÆMIA CONSEQUENT UPON DISEASE.

All diseased states of the human organism, in which the due relation is not preserved between the renewal of the blood and its consumption, so that more of the vital fluid is expended than is during the same period reproduced, give rise at last to a condition which, besides other appearances, manifests itself in a pale, dingy, earthy, or dirty-yellow look of the skin, called by the name of oligæmia or anæmia. Thus, in patients convalescing from prolonged febrile complaints, we see the same pale and earthy appearance of the skin as in those who suffer from advanced tuberculosis, syphilis, scorbutus, carcinoma, chlorosis, &c. At the same time, the skin may generally be noticed to have a greasy feel, resulting from an increased secretion of fat by the sebaceous glands, as well as from changes in the formation of the epidermis. This condition and the presence of numerous white branny scales constitute an affection to which writers have given the names *pityriasis tabescentium, phthisicorum, scrophulosorum,* &c. Another symptom, also, which has the same origin, is the falling off of the hair (*Defluvium capillorum*), which in most cases accompanies this form of anæmia.

B.—ANÆMIA OF THE SKIN, CAUSED BY PERVERTED INNERVATION.

Various influences may so affect the nervous system as to give rise to an anæmic condition of the skin, in addition to all sorts of other symptoms. Fear, distress, anger, indignation, frequently produce pallor of the face, which arises suddenly, mostly lasts somewhat longer than the mental disturbance by which it was caused, and terminates without any further consequences in the return of the normal colour of the skin. So also fainting, whatever may be its cause, makes the whole surface of the body pale, and, as I have already stated, leads to a suspension of hæmorrhage.

A knowledge of anæmia of the skin, and of the group of symptoms to which this gives rise, affords an explanation of certain peculiar appearances, and often enables us to interpret them in a way quite different from what has hitherto been done.

The pallor of the skin, resulting from imperfect injection of the capillaries, will, of course, whatever may be its cause, show itself not less in those who suffer besides from some cutaneous disease, than in those whose skins are otherwise healthy. But if this skin-affection be one of those which manifest themselves chiefly by a vascular injection and redness of the surface, it is clear that no trace of it will be seen, so long as the anæmia persists.

For the same reason, on the dead body certain appearances of the skin alone remain visible. Such are those which arise from changes in the structure of the different tissues of the skin (as, for example, the thickening of the epidermis in tylosis, ichthyosis, &c., and that of the cutis in pachydermis, keloid, elephantiasis Græcorum, &c.); and those which are due to the presence of morbid products (such as scales, crusts, pigmental deposits, parasitic growths, &c.) deposited on the surface of the skin, or infiltrating its tissues. The only mere reddenings of the surface, which are to be seen in the dead body, are those which are caused by extravasation of blood, or by the presence of inflammatory exudation in large quantity. On the other hand, all those rashes which arise merely from hyperæmia, or accompany the less severe exudative processes, disappear altogether after death.

Hence, it is not surprising that in those who have died of morbilli, scarlatina, or erysipelas, the skin presents a colour altogether different from that seen during life. It is also in vain that one looks in the dead body of a patient who suffered from psoriasis, eczema, or lichen, for the numberless bright-red spots which existed on the surface of his skin while he was alive. Unless their position is betrayed by the presence of scales, or of pigment, it is not possible to demonstrate the existence of these eruptions after death.

As this is what becomes in the dead subject of skin diseases which were present during life, we shall not be astonished to observe the same thing in the living patient, whose skin, like that of a corpse, is in an anæmic state.

Hence, when syncope suddenly occurs, we find that those dermatoses vanish which manifested their presence by reddening of the skin; and, as consciousness returns, they also reappear. For the same reason, parts of the skin which had been reddened, become pale during the last struggle for life.

A similar influence upon various forms of skin-affection is produced also by the anæmia caused by loss of blood, and that whether this state is developed rapidly as a result of hæmorrhage, or slowly from excessive consumption of the blood in its circulation through the body. Hence, chronic skin complaints disappear when prolonged febrile diseases of the organism such as pneumonia, typhus, &c., have caused a diminution in the quantity of the vital fluid, and this occurs in proportion to the advance of the general disease. Thus it is that we find chronic dermatoses alternating with acute affections of internal organs, disappearing during the course of these complaints, and showing themselves anew while convalescence is in progress. We never observe the reverse, that is to say, that the skin disease vanishes first, and that the visceral affection occurs afterwards as a result of its disappearance. The idea that this might take place had formerly, as is well known, very many, and has unfortunately even now some, supporters, and gave rise to the doctrine of the liability to metastasis of chronic skin affection, a doctrine utterly without foundation.

CHAPTER V.

CLASS III.—ANOMALIÆ SECRETIONIS GLANDULARUM CUTANEARUM.

Diseases due to perverted states of the Secretions of the Cutaneous Glands.

The affections belonging to this class are of two kinds—the first group including the various functional disorders of the cutaneous glands; the second, their structural diseases. These last, however, concern the *sebaceous* glands alone, of the two varieties of secreting organs contained in the skin; for, up to the present time, the *sudoriparous* glands have not been shown to be subject to any such structural affections.

Now, I propose, in the first place, to describe those morbid conditions of the cutaneous glands which affect the functional activity of these organs. But before doing so I must define the position which I take up in reference to these disorders.

This is not the place to point out the important effects on the system generally which must be produced by any excess or diminution in the secretory activity of the cutaneous glands. My chief object must rather be to describe those morbid conditions of the skin to which a perverted state of their functions often gives rise. Hence the present subject naturally divides itself into two parts. I must first describe the morbid changes in the secretions themselves; and, afterwards, the cutaneous affections which result from those changes.

Before referring specially to the sweat and the sebum (the two secretions which are found in and upon the surface of the skin), it may be well that I should draw attention to the fact that these substances can be regarded as existing separately from one another, only when one of the two can be plainly recognised by its own peculiar characters. Slight variations in their proportionate quantity can scarcely, if at all, be detected. In the healthy state the products of both kinds of glands reach the surface of the integument in a more or less aëriform condition. Among other purposes, they serve to moisten, polish, and lubricate the skin. When secreted together in the normal way, they constitute a vaporous exhalation, which cannot properly be regarded as either sweat or sebaceous matter, but is really a combination of them both. With the addition of the fluids and gases which are poured forth by the vessels of the papillæ themselves (independently of any glandular organs), and which pass through the epidermis, the exhalation before alluded to is what has been termed by physiologists the *materia perspiratoria.* The fact that the secretions of the sudoriparous and sebaceous glands are poured out simultaneously upon the surface of the skin, and there mixed together, has hitherto thrown great difficulties in the way of all attempts to determine the normal microscopical or chemical characters of either of these products. Indeed, none of the analyses hitherto made can be supposed to be absolutely correct.

Those who have investigated the composition of these substances have adopted various methods, but have never succeeded perfectly in separating from one another the secretions of these two kinds of glands. Thénard, in his experiments, made use of shirts, saturated with perspiration; Anselmino collected the secretion by enclosing some part of the body in a cylindrical tube of glass; Schottin, with a similar object, washed the surface of the skin after death. No satisfactory results, however, were obtained by any one of these procedures; nor did any better success attend Séguin's method of employing silk, covered on the outer surface with caoutchouc, to absorb the perspiratory secretion; or the attempts of Funke and Favre to collect the sweat from a person placed in a vapour bath, and made to lie on a metal surface hollowed towards the centre. Whatever plan they may have adopted, experimenters have obtained, not the pure secretion of the sudoriparous glands, but a mixture of this and sebum, containing also detached epidermic scales and condensed vaporous exhalations. Moreover, the artificial conditions under which such investigations are made necessarily introduce further errors into their results, by altering the quantity of the cutaneous secretions.

Thus, then, the statements of different authors with reference to the quantity and composition of the glandular secretions of the skin have only a subordinate value. This is, indeed, confessed by Ludwig, Henle, Lehmann, Valentin, Kölliker, and other physiologists.

As for the chemical constitution of the sweat, those who have analysed this fluid assert that it contains from 99·30 to 99·55 per cent. of water, the residue consisting of solid matters, among which are chloride of sodium, phosphate of lime, hydrochlorate of ammonia, and traces of iron and of fatty matters. Favre, for example, gives, as the solid substances contained in this secretion, chloride of sodium, chloride of potassium, sulphate of potass, phosphate of soda, earthy phosphates, albuminate of potass, lactate of potass, a potass-salt containing a peculiar acid (Schweisssaueres Kali), urea, and fat.

Schottin,[1] again, analysed the perspiration of the feet, and found in a hundred parts of this fluid 0·05 of insoluble, 0·84 of soluble matters. These consisted of—

Phosphate of lime . . .	0·037
Phosphate of magnesia . .	0·013
Chlorine	0·279
Sulphuric acid	0·049
Phosphoric acid . . .	0·020
Sodium	0·251
Potassium	0·099

It is, however, necessary to bear in mind, that great variations in the quantity and quality of the cutaneous secretions occur normally even in the same individual, and still more in different persons, although apparently in good health and of similar constitution. These variations could not be in any way taken into account in the analyses I have quoted; and this fact may be given as another reason for the great differences in the results obtained by so eminent observers, in addition to the difficulty (to which I have already referred) of isolating these secretions, and analysing them separately. Hence it appears to me that the distinctions between the different diseases of the skin, caused by morbid conditions of its glandular organs, must not be made to depend upon chemical analyses, such as those of which I have been speaking. The characters of the affection must in each case be regarded from a *clinical* point of view, and its definition must be based on the mode of succession of the symptoms, that is to say, upon the *course* of the disease.

From this stand-point, then, I shall endeavour to deal with the subject before me.

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[1] 'De Sudore,' diss. inaug., Lipsiæ, 1851.

The affections produced by functional disorder of the glandular organs of the skin may be divided into three groups, according to the nature of the morbid products which present themselves. First, there are diseases of which it cannot be positively stated whether they arise from a perverted activity of the sudoriparous or of the sebaceous glands, or even of the papillæ of the cutis. The substance which appears on the surface of the skin is, in these cases, what would in the normal condition be termed, as a whole, the *materia perspiratoria*. Secondly, there are affections which are attended with the formation of a watery fluid in large quantity, due principally to the action of the sweat-glands. Lastly, there are conditions in which the secretion is shown to be the product of the sebaceous glands, not only by its peculiar nature, but also by the position which it occupies.

A.—AFFECTIONS PRODUCED BY MORBID STATES OF THE MATERIA PERSPIRATORIA.

The conditions which come under this head are principally those in which our sense of smell is powerfully and disagreeably affected by exhalations possessing a specific odour. Even in the normal state each human being probably diffuses around him a special odour, although this is not strikingly perceptible to our senses. Animals, such as dogs, whose power of smell is acute, are well known to recognise their master by this sense rather than by that of sight; and it is also a fact that persons still uncivilised, such as negroes and Indians, are able to scent friends or foes from a distance.

But even on the imperfect sense of smell possessed by ourselves certain persons produce a disagreeable impression; and there are those who, in spite of the most scrupulous cleanliness, cannot remove the specific evil odour which clings to them. Now, it cannot be maintained that this unpleasant smell belongs exclusively to the perspiratory secretion. On the contrary, the odours observed in these cases generally resemble those of the fatty acids, substances which are certainly formed in much larger proportion by the sebaceous than by the sudoriparous glands.

Hence, I am not disposed to ascribe to a morbid state of the sweat alone the disease which is spoken of by authors under the name of *Bromidrosis* (*Osmidrosis*, stinkender Schweiss). I regard it as resulting rather from an abnormal condition of the *materia perspiratoria*, that is, of the cutaneous exhalation as a whole.

In these cases of bromidrosis the disease, as is well known, may either be universal, affecting the whole cutaneous surface, or confined to some particular part of the skin. Hence, if we would adhere to the old terminology, we must divide this complaint into a *B. universalis* and a *B. localis*.

(*a*) Bromidrosis universalis.

Under this head are to be reckoned those cases in which there arises from the surface of the skin a fetid exhalation, of which we cannot indicate the special source, the patient being at the time in a healthy state, and the cutaneous secretion not being particularly increased in quantity, or, at any rate, not collecting in the form of drops.

If a person remains continuously in an atmosphere which is impregnated with any substance having a specific odour, this will, of course, adhere mechanically to his clothes, skin, and hair. But, at the same time, he will inhale these odorous matters suspended in the air, and therefore must also exhale them through the agency of the cutaneous organs, namely, the sweat-glands, sebaceous glands, and papillæ. This is proved by what we observe in those who have, for a long period, been placed under such conditions. However frequently and thoroughly such persons may endeavour to cleanse themselves, it is only after the lapse of a considerable time that they lose the subjective sensation of the peculiar smell, and cease to give off from the skin a similar odour.

There have, indeed, been physicians, who, with Heim, of Berlin, have maintained, not only that each one of the exanthemata possesses a specific smell, but also that they could detect it so constantly and with such precision as to be in the enviable position of being able, by means of this odour, to distinguish these diseases from one another. Thus, it has been asserted that patients affected with morbilli exhale an odour like that of recently plucked feathers; that in scarlatina the smell resembles that of new bread; in small-pox, that of a menagerie; in the disease termed "*Friesel*,"[1] that of decomposing straw. But the organ of smell must surely be extraordinarily acute to be able to detect these odours; and in any case they have no claim to be termed characteristic, for the substances with which they are compared by no means possess a smell so decided as to prevent the possibility of confounding them with many others.

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[1] This disease is fully described by Prof. Hebra under the name of "miliaria" in a later chapter of this work, among the acute, non-contagious, exudative dermatoses.—[Ed.]

(*b*) Bromidrosis localis.

Among the parts of the skin from which disagreeable odours most frequently arise must first be mentioned the axillæ. In these regions, as is well known, there exist large glandular bodies, which bear a general resemblance in their structure to the sweat-glands, but have been termed by some *ceruminous* glands, from their being still more like those which are found in the external auditory meatus, and secrete the cerumen. The true character of these organs is doubtful, it being still a matter of dispute whether they should be reckoned among the sebaceous or rather among the sudoriparous glands.

The male and female genitals, the perinæum, the neighbourhood of the anus, the soles of the feet, and particularly the lateral surfaces of the toes, must also be mentioned as liable to give off intense odours of a similar kind.

In each of these regions the secretion of the skin has, normally, a disagreeable smell, and, under certain circumstances, may be so increased in quantity and changed in character, that its altered condition is, in itself, a disease. Moreover, this fluid then gives rise to an unhealthy state of the skin over which it flows; the appearance thus produced being sometimes merely a reddening and maceration of the epidermis, or, in other words, an intertrigo; whereas, in other cases, it amounts to an actual eruption, of a papular, vesicular, or bullous character, and, in fact, presents all the symptoms of an eczema.

So far as the *bromidrosis pedum* is specially concerned, this arises from the extraordinary quantity of the cutaneous secretion which is poured out, rather than from its being, when first formed, particularly altered in composition. Obviously, therefore, the fœtor will become more intense as the amount of this fluid increases; for if we compare the smell of the ordinary cutaneous secretion of the feet with that of the so-called unhealthy perspiration, we find that these odours differ, not in their quality, but merely in their intensity, which, in fact, rises and falls with the changes in the quantity of the fluid poured out. In the normal state the smell can be perceived only when the nose is brought close to the person's foot; under morbid conditions it is noticed even at a distance.

But, however much the sweat may in such a case be increased in quantity, it will be found, on investigation, that this fluid is not in reality the only source of the evil odour given off by the cutaneous secretion. On the contrary,. this smell arises from the presence of a large proportion of fatty matters, the product of sebaceous glands which exist abundantly on the sides of the toes and also on the dorsal surface of the foot. When this secretion is first formed, however, no disagreeable odour belongs to it any more than to that of the sweat-glands or to the exhalation of the papillæ. The smell arises only when the fluid has remained for some time on the surface of the skin, and especially when it has undergone decomposition, its evaporation having been prevented by the coverings worn on the feet. As I have already stated, this secretion contains fatty matters in large quantity. These, of course, tend to undergo those changes to which all such substances are liable, consisting in the formation of the well-known series of fatty acids, among which are the caproic and the caprylic. This decomposition, which is favoured by the warmth and moisture of the parts, gives to the perspiration the smell characteristic of these acids.

These changes occur even under normal conditions, but to a far greater extent when the secretion from the feet is excessive, so as to saturate the shoes and the socks or stockings of the patient. And it is obvious that the more often these articles are soaked with perspiration, and the longer they are worn without being changed, the more intensely will they become impregnated with this odour, which they will communicate to the air around.

That this is really the case any one may prove by taking a person who suffers from this complaint, removing his ordinary shoes and stockings, and making him wash his feet thoroughly several times, and lie in bed for a few days. If, at the end of this time, the smell of the things which were laid aside be compared with that of the feet, it will be found that the latter, even though they may have become covered with sweat beneath the bed-clothes, no longer give off the disagreeable odour which still adheres powerfully to the shoes and stockings.

It is clear, then, from what has been stated, that there is not, properly speaking, any disease in which the secretion of the feet is fetid, but that there is an affection in which this fluid is formed in excessive quantity, and afterwards acquires an evil odour as a result of its decomposition.

Hence there is obviously no foundation whatever for the absurd fancies which formerly prevailed as to the usefulness or injuriousness of this fetid secretion, or as to the ill-effects of its suppression, by which various other diseases were supposed to be produced.

B.—Affections caused by Functional Disorder of the Sudoriparous Glands.

(1) *Quantitative Changes in this Secretion.*

A. Hyperidrosis.

a. Hyperidrosis universalis.

Under the name of hyperidrosis is to be understood that condition of the skin in which the secretion of the sudoriparous glands appears as a fluid in the form of drops, and does not entirely pass off in a vaporous state, as is normally the case. The use of this term should, however, be restricted to those instances in which such an accumulation of the sweat occurs under conditions in which it would not naturally be observed, or, at any rate, would be but slight; so that the excessive secretion is in itself to be regarded as morbid, and the more so because it also gives rise to certain secondary affections of the skin.

It is obvious that in this place I cannot attempt to describe those forms of hyperidrosis (Schweisssucht) due to the presence of some other disease, of which sweating is one of the regular symptoms, or in which it is often present.

Thus, I shall make no further mention of the non-febrile chronic ephidrosis of Schönlein,[1] or of the colliquative sweats of phthisical patients, or of the so-called "*critical*" sweats which occur in acute febrile diseases, such as typhus and the exanthemata. Nor shall I give an account of the "suette de Picardie,"[2] an affection which appeared in Picardy in 1718, or of the "*sudor Anglicus*,"[3] another of these complaints, which broke out in the army of Henry VII in 1485, and is said to have raged in England, France, and Germany, on five separate occasions between 1485 and 1550. I shall concern myself with hyperidrosis only from the dermatological stand-point, describing those affections alone which simply consist in a perverted state of the perspiratory function or are caused by the local action upon the skin of sweat already secreted.

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[1] Schönlein's 'Path. u. Ther., nach dessen Vorlesungen, von einigen seiner Zuhörer herausgegeben,' vol. iii, p. 142. St. Gallen, 1841.

[2] Ozanam, 'Mal. épidém.,' vol. i, p. 222. Paris et Lyons, 1835.

[3] Ibid., vol. iv, p. 93.

Now, it is well known that some individuals perspire under circumstances under which the skin of other persons remains perfectly dry, and yet that this form of hyperidrosis leads to no ill-effects on either the general health or the other functions of the body. Examples of this are far from being rare, either in medical literature or in our daily experience. The persons who thus "melt" (zerfliessen) into perspiration, on the slightest bodily exertion or movement, are generally stout, well-nourished, and inclined to be fat, possessing a good digestion and an equally good appetite both for solids and fluids.

Again, there are others who likewise sweat enormously, but only under the influence of a high temperature, as when they are exposed to the rays of the sun or to some artificial source of intense heat. This is observed, for instance, in the inhabitants of southern climates, and also in the case of stokers, glass-blowers, and men who follow certain other occupations.

Now, in many individuals, this exalted activity on the part of the perspiratory glands leads to no morbid change in the vital condition of the skin (in dem Hautleben); but in others it gives rise to an efflorescence exactly similar, both in form and colour, to those eruptions which are well known to be produced by the action of various irritants. This efflorescence generally consists of small red papules, seated chiefly at the apertures of the cutaneous glands. Vesicles also are occasionally present, and these may even contain a puriform fluid, being, in reality, small pustules. All these are at first isolated from one another, and it is only when the rash has been of long duration that they coalesce, so as to form large continuous patches.

These appearances have received different names, according to the cause which gives rise to them. When they are observed on the skin of persons otherwise healthy, in whom the cutaneous surface is covered with drops of sweat, they are called *sudamina*. When met with in southern climates they are termed *calori;* and other names, all belonging to the same affection, are the "*lichen tropicus*" of Willan, the "*sesh*" of Cleghorn, the "*prickly heat*" of English, and the "*Hitzblätterchen*" of German writers.

In their form, extent, and seat, and also in the course which they take, these eruptions are altogether similar to those which we can generate artificially by the application to the skin of various irritants. Thus, the action of hot or cold water, in the form of baths, fomentations, or lotions, gives rise to affections to which the name "*psydracia thermalis*" was formerly applied, and which more recently, when caused by the hydropathic mode of treatment, have been regarded as indicative of crises (Hautkrisen). They are, in fact, artificial forms of eczema, and with them, as I have said, the disease which I am now describing is perfectly identical.

Hence it would in reality be better to use the name eczema to designate these papular and vesicular eruptions due to hyperidrosis, some epithet, such as "*sudamen,*" being added. Thus, they might receive the common appellation of *eczema sudamen*. The name *sudamina*,[1] however, has hitherto been generally given to these affections, and the other terms which I have quoted have also a certain claim to be noticed, being employed in various works; I have therefore been obliged to refer to them; but I may, finally, again remark that all these appellations—sudamina, calori, miliaria rubra, &c.—belong to one and the same eruption, which accompanies profuse sweating.

This is shown by the fact that, when such an efflorescence has lasted for some time, the appearances presented by it are in every respect identical with those of any other form of eczema, whether originally produced by the action of some cutaneous irritant or even by a morbid condition of the system generally.

He who is acquainted with the various stages, through which an eczema passes, will recognise all of them in the so-called "*sudamina*," the eruptions caused by excessive sweating. This is particularly the case when the perspiration goes on without cessation both by day and night, as in those who live in tropical climates, or follow certain occupations. The same thing, however, may be observed also when these forms of efflorescence, being regarded as "crises," and therefore as desirable, are aggravated by methods of treatment supposed to be judicious, but which are, in reality, quite the contrary.

In this way it might often happen that the most severe varieties of Eczema rubrum and E. impetiginosum should be generated from eruptions which were originally mere "sudamina." To produce this result we have only to excite the cutaneous glands still further, by making the patient wear warm clothing, giving him hot drinks, and keeping him in a heated atmosphere. Even the application to the skin of stimulating ointments, or the use of warm or cold baths, which likewise act as local irritants, may in these cases be sufficient to convert a simple papular or vesicular eczema into one of the more intense forms of this disease.

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[1] It is scarcely necessary to remark that this term is generally used by English writers in a different sense. The eruption consisting of transparent vesicles commonly termed 'sudamina' in this country, is described by Prof. Hebra under the name of Miliaria. [Ed.]

But if, in such a case, the temperature of the skin is no longer raised above the normal level, and if the excessive perspiration consequently ceases, the eruption will shortly fade; some of the *papules* will become covered with minute scales of detached epidermis; the itching will diminish, and the integument will gradually return to the healthy state, presenting at last no trace of the disease with which it was affected. But even when sudamina thus subside, instead of passing into more severe affections (as they do when irritated), the course which they take still shows their identity with the eczemata.

Authors have propounded different views with reference to the mode of development of these eruptions due to excessive sweating. Some think that the fluid, being exhaled over the whole surface of the skin by the papillæ, and not merely by the sudoriparous glands, accumulates beneath the epidermis, and raises it into papules or vesicles. Others consider the mouths of the sweat-glands to be the seat of the vesicles, attributing them to the fact that the spiral ducts of these glands open very obliquely. Others, lastly, think that the sweat, when formed, is an irritant to the skin, and acts like any other irritant applied to its external surface, and they regard sudamina as the result of this action.

Careful observation of this affection shows, however, that the papules and vesicles are not caused by the action of the sweat after its secretion, but arise, if not before the perspiration occurs, at least simultaneously with its first appearance.

Thus, there are some individuals who, when affected with profuse sweating, are liable to become covered in a few hours, for instance, in the course of a single night, with an enormous quantity of sudamina. In certain persons, on the other hand, some parts of the skin are for years almost continually covered with perspiration, without any sudamina or, indeed, any eruption whatever, being formed. This is the case with most of us, so far as the skin of the axillæ, nates, and genital organs is concerned. The sweat does, indeed, like any other warm fluid, act injuriously on those parts of the skin with which it comes into contact. But it is the epidermis which first suffers from this action, and only when this has been macerated and softened can the subjacent corium be in any way affected by it.

I am, therefore, inclined to regard sudamina as caused, not so much by the perspiration already poured out upon the surface of the skin, as by the hyperæmic state of the cutis, and the consequent elevation of temperature, which precede the secretion of that fluid. The vessels which aid in the formation of the sweat include those which supply the papillæ, as well as those which enclose, in their meshes, the sudoriparous and sebaceous glands; the whole network of capillary vessels in and beneath the skin being, in fact, concerned in the act of secretion. Hence the perspiratory fluid, being everywhere poured out in excessive quantity, and collecting beneath the epidermis, raises it in the form of papules or vesicles, while at the same time the papillæ themselves become reddened and swollen.

A proof of the correctness of this view is surely furnished by the fact that the patient complains of a transient pricking sensation in the skin, while the sudàmina are being developed. This could hardly be explained if the only structures concerned were the sudoriparous glands, which certainly are not known to be very sensitive organs. But these precursory feelings of pricking and formication, often amounting even to intense itching, are sensations which are likewise observed in other affections of the cutaneous papillæ. The English name, "prickly heat," appears to have reference to these subjective symptoms.

Treatment.—Although medical advice is not sought in very many cases of sudamina, there are yet some more severe forms of this affection which are brought under the observation of the physician, either because they are mistaken for other diseases, or because the patient is annoyed by the sensations of pricking, formication, or itching, with which they are attended.

Now, when we are able to lessen or stop altogether the exposure of the patient to the action of heat, there will be no further difficulty in relieving him of his complaint. But this cannot always be done. It is often impossible for him to withdraw himself from the operation of the agencies which set up the disease.

Under such circumstances we must at any rate avoid aggravating the affection by injudicious treatment. Above all, we must not allow the patient to take baths. Warm baths are particularly injurious, and we must dissuade him from using them, even though, as is generally the case, he may urgently demand from us permission to do so. It is also of great importance that we should give up the old idea that these eruptions must not be rapidly "driven in," on account of the danger that metastasis should occur. In fact, it should be our firm conviction that we ought to do all in our power to prevent the appearance of fresh sudamina. Lastly, we must be especially careful not to irritate the skin, for irritation of any kind may cause a slight form of this rash to undergo further development, and lead to the production of new papules or vesicles.

In many cases the avoidance of all fresh causes of irritation will be sufficient to relieve or even cure the patient. But it is necessary to remember that all fatty and oily substances, as well as ointments containing these substances, act as irritants to the skin of many individuals. In the management of this affection, therefore, we must carefully avoid all such applications, besides forbidding the patient to employ baths, which, as I have already stated, are also very injurious. A purely expectant mode of treatment, provided the skin be kept cool and dry, will in most cases lead to the involution of the disease. The bed- and body-linen should, however, be frequently changed, especially things which have been soaked with perspiration; and some pulverulent substance, such as starch, lycopodium, or powdered asbestos, may be applied locally as an auxiliary remedy.

β. Hyperidrosis localis.

When the perspiratory secretion of any part of the body is increased the surface of that region will obviously feel moist and cool. But, further, if the sweating continues, we find that certain injurious effects are produced by the local action of the perspired fluid on the skin. Under such circumstances the epidermis, being saturated with sweat, presents the same appearance as when it has, for a long time, been acted upon by any other warm fluid. Its condition is, in fact, identical with that produced by a warm bath. Thus, on the palms of the hands and the soles of the feet the skin becomes wrinkled, and assumes a white colour, its most superficial layer becoming soaked and softened, so as to be readily detached by rubbing.

In other regions, however, as, for example, on the scalp and on the surface of the axillæ and genitals, this condition is not observed, even when the skin has for a long time been exposed to the local action of the perspiration. At these parts, the surface remaining, as already stated, moist and cool, a more or less intense reddening of the skin is produced, and the horny stratum of the epidermis becomes partially removed. This affection is, in fact, that which is termed intertrigo (Fratt). Sometimes, however, the ordinary eruption, which I have described under the name of sudamina, arises in these cases.

In conclusion, I must not omit to refer to the cases, cited by several authors[1], of perspiration occurring on only one side of the body. This affection has sometimes been general, sometimes partial. Thus it has occupied only one cheek,[2] or one hypochondrium (Doleus); or one side of the abdomen, chest, or back of the neck; or even one upper or lower limb. I have never myself had occasion to see a case of this kind; but I am not disposed to doubt the correctness of the statements made by the writers above referred to, or to deny the possibility that such anomalous affections of the perspiratory glands may sometimes occur. Indeed, we could, at the present day, give an explanation of them by referring them to a morbid state of the local innervation.

Many writers of good repute, such as Ledel, Frommann, Lanzoni, Paulini, Helwich, and Speranza, are quoted by Jos. Frank,[3] as having asserted that they had seen sweat formed after death. I cannot, however, admit the truth of so extraordinary a statement, for, indeed, such an occurrence is physically impossible. It appears to me that the mistake arose from the fact that a corpse was sometimes found to be wet. This fact, however, may be explained by referring it to the well-known circumstance that cold bodies, when placed in air which is at a higher temperature, condense watery vapour upon their surface, and therefore become moist. For instance, a deposit of moisture is formed during winter on the window-panes of a warm room.

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[1] Francus de Franckenau, 'De sudore unius tantum lateris, c. addendis,' G. Dethardiug ('Miscell. Acad. Nat. Cur.' Dec. i, A. 4 et 5, 1673 et 1674, p. 103; Cent. i et ii, Append., p. 188). J. Schmid (ib., Dec. ii, A. 2, 1683, p. 287). P. Rommel (ib., Dec. ii, A. 10, 1691, p. 376). S. Ledel (ib., Dec. iii, A. 2, 1694, p. 62). B. T. Otto Hanneman (ib., Dec. iii, A. 5 et 6, 1697, 1698, p. 401). Bichat, 'Anatomie Générale.' Paris, 1812, t. iv, p. 703. B. Roque, 'Observateur des Sciences Médicales.' Avril, 1823. Jos. Frank. 'Hautkrankheiten.' iii Theil, p. 312, Leipzig, 1843.

[2] Kostremski, 'Memoires de Paris,' 1740, Hist., p. 51.

[3] Op. cit., Band iii, p. 317.

The forms of local sweating which are of most interest, from a dermatological point of view, are those which affect the axillæ, the genital organs, the palms of the hands, and the soles of the feet. For in these regions there are often produced morbid appearances which may easily be misunderstood, and wrongly explained, by those who have but an imperfect knowledge of the physiological and pathological changes to which the skin is liable. Indeed, the literature of the subject shows that these diseases have frequently been supposed to be more serious than they really are.

The effects of hyperidrosis may, in fact, present themselves in a somewhat more intense form than has hitherto been described, and then no longer consist in a mere reddening of the surface, or in the production of papules or vesicles, attended with but little discomfort to the patient. On the contrary, they sometimes pass into severe cutaneous affections, which are in no way distinguishable from those forms of eczema caused by other local irritants. In other words, *the Hyperidrosis localis may give rise to eczema in all its grades.* To this point I shall again have occasion to refer when speaking of the etiology of eczema.

Hence, when simple eczema, or even *E. rubrum* or *E. impetiginosum*, presents itself in the axillæ, on the scrotum, on the inner surface of the thighs, or round the anus, we must always bear in mind the possibility that the affection may have been caused by a perverted state of the local perspiratory function.

I have, however, never seen the palms of the hands or the soles of the feet attacked with eczema, as a result of hyperidrosis. The palms of the hands, indeed, are never in any way affected by the secretion of sweat upon their surface, merely feeling unusually damp and cold. In some cases, also, no further changes are produced in the soles of the feet; but in other instances, particularly when the excessive perspiration has lasted a long time, the cuticle of these parts becomes softened, and partially cast off. This gives rise to a very painful condition of the tracts of skin thus deprived of their covering. The tenderness is, indeed, sometimes so extreme that the patient cannot walk or even stand, and can wear neither shoes nor boots, so that he is obliged to keep his bed.

Thus, the *Hyperidrosis localis*, a disease which is in itself of very little importance, may in certain cases be very disagreeable to the person suffering from it, not only on account of the pain which it produces, but also because it interferes with his earning his living. All that needs be said in reference to the smell of the perspiration in these affections has already been fully described under the head of Bromidrosis.

When we have occasion to observe one of these cases for a considerable time we often find that the cutaneous affections caused by the excessive perspiration ultimately subside, giving rise to no further injurious effects, so far as the skin is concerned. Sometimes, however, they pass into an intertrigo, or into sudamina, or even into an eczema. In this case the disease so produced takes the ordinary and well-known course of other forms of the affection. Lastly, when the hands or feet are the parts affected, the only appearances to be observed are those changes in the epidermis which have already been more than once described.

These different affections, having once developed themselves, and reached a certain degree of intensity, do not afterwards undergo any changes of importance, but remain stationary so long as their exciting cause continues. They do not in any way affect the general system; so that, on the one hand, pre-existing diseases are not cured, or even relieved, by the appearance of a local hyperidrosis; and, on the other hand, the subsidence of the swelling does not lead to the development of any fresh malady. It has, indeed, been supposed that such effects have been produced; but it is probable that, in most of these cases, an error of observation was made, from the complaint having been imperfectly watched; the only other supposition being that they occurred accidentally.

Our knowledge of the etiology of the diseases which affect the human body is as yet, unfortunately, very limited; indeed, there are but few maladies of which we have succeeded in determining the real cause. When, however, no plausible explanation can be found, medical men, as well as unprofessional persons, are apt to attribute disease to agencies which are quite imaginary; as, for example, to "catching cold," "errors of diet," or even "mental emotions;" and thus the suppression of eruptions, or of the perspiration of the feet, has been recognised as one of the causes of various affections. An unprejudiced observer, however, will not be led to believe in such a theory. My experience, at any rate, teaches me that persons may suffer for years from one of the local forms of hyperidrosis (particularly that form which affects the feet), and yet find this complaint no talisman, capable of protecting them from intercurrent internal diseases; and, conversely, although I have often succeeded in putting a stop to the profuse sweating, I have never, during more than twenty years, seen any other malady arise as a result of the cure of this complaint.

I am, at present, unable to explain the exact cause of the hyperidrosis which affects the hands and feet, or, indeed, of any one of the forms of this disease. I find, from statistics, that it affects the young as well as the old, both males and females, rich and poor, those who are of cleanly habits and those who are dirty, persons who are in good health and those who suffer from other maladies.

Since, then, our acquaintance with the causes of these affections is so scanty, we can follow an empirical method only in our efforts to cure them. Fortunately, however, these efforts are attended with success.

Although, from a theoretical point of view, it appears very probable that we might be able, by energetic stimulation of the kidneys, to diminish the amount of fluid excreted by the action of the skin, yet experiments actually made with this object have led to no satisfactory results. Neither diuretics nor purgatives, whether mild or drastic, have, even when continued for a considerable time, effected a cure of the hyperidrosis.

Many authors have advised the use of other internal remedies, besides those already spoken of, in the treatment of this complaint. Thus, Paulus Ægineta recommends astringents; Van Swieten, salvia; Sydenham, Malaga wine. Dupont[1] asserts that he cured a woman who had suffered for six years from chronic sweating by the administration of the extract of aconite (in a dose varying from gr. ss to gr. xvj (!), daily). Rayer advises the employment of the *Agaric blanc*[2] and of cinchona. Among other remedies, proposed by different writers, may also be mentioned whey prepared with alum, camphor, the *Elixir vitrioli Minsichti*,[3] opium, &c.

The "antiphlogistic" method of treatment, including venesection and the application of different counter-irritants, has also been employed in the attempt to control these forms of sweating.

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[1] "Hist. d'une sueur chronique," &c. ('Journ. Gén. de Méd.,' 1807, t. xxx, p. 33).

[2] The *Polyporus officinalis* (Michaux), a fungus which grows on the trunk of the larch.—[Ed.]

[3] This preparation resembles the "Acidum Sulphuricum Aromaticum" of the Edinburgh Pharmacopœia.—[Ed.]

However, no one of these plans has proved successful in the hands of my predecessors or contemporaries. Hence they have generally endeavoured to get out of the difficulty, so far as the patient was concerned, by asserting that it is not advisable, in these cases, to suppress the perspiration too suddenly. In reference to this point we meet with the most extraordinary assertions, every kind of disease being said to be produced by the sudden checking (no doubt, by bunglers in their art) of the perspiration of the feet. Thus, Jos. Frank[1] relates that a man, aged thirty, whom he had previously cured of an attack of hemiplegia, died quite unexpectedly, in consequence of his skin having been exposed, while sweating, to a cold draught; and Rayer asserts that, in a patient under his care, the suppression of the perspiration of the feet was followed by a chronic pleurisy.

Although I could find many similar instances in the older medical works, I quote these two only, because they are sufficient to show what fanciful views were formerly indulged in, and how even physicians of great skill were influenced by the prejudices of their age. It is hardly necessary for me to add that all such statements are based on a complete perversion of the facts, and rest on no scientific foundation whatever, so that, in the present state of physiology and pathology, they do not even require to be refuted.

The large number of local remedies employed and recommended by the older physicians with the object of checking the *Hyperidrosis pedum* shows, however, that, in reality, they did not shrink from "suppressing" (or, in other words, *curing*) this affection; and also that the many internal medicines which they prescribed did not succeed in removing the complaint. Among the substances which they thus applied locally may be mentioned the sulphate of zinc, alum, the tincture of kino, tannin, the oleum cadini, and various preparations of iodine, including its combination with glycerine. Again, they recommended the use of waters containing carbonic acid, and prescribed sulphur baths, or the use of salt-water baths for the feet; or they directed that the skin should be frequently washed with water or with very dilute alcohol or acetic acid.

But although I have repeatedly had occasion to employ all these local remedies, I have yet in no instance been able to satisfy myself that they produce any good effects, while I have succeeded in curing this affection by the adoption of a different method of procedure, which I will now explain.

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[1] Op. cit., band iii, p. 320.

In slight forms of hyperidrosis, such as affect the skin of the axillæ, the genitals, or the palms of the hands, marked benefit has resulted from the frequent local application of a solution containing one drachm of tannic acid in six ounces of alcohol. This liquid should be rubbed into the part several times a day, and the skin must not be wiped afterwards. A little powdered asbestos is to be sprinkled on it while still wet, and with this the part is to be again rubbed till it is dry.

In cases in which the feet are affected with this complaint, but in which it is of no great severity, all that is necessary is to dust some pulverulent substance into the socks or stockings. Starch, lycopodium, powdered asbestos, almond bran (Mandelkleie), or even common flour, may be used for this purpose. Some writers advise the addition of a little cream of tartar to these powders, but I regard this as superfluous.

In intense forms of this affection, however, in which the secretion is fetid, this method is not attended with success. A somewhat more complicated plan of treatment is then required for the cure of the disease.

It will be remembered that, according to the explanation given above, the fetor, in these cases, is due, not to any substance existing in the secretion when first poured out, but to a decomposition which it is apt to undergo when absorbed by the coverings of the feet, so that it cannot evaporate. Obviously, therefore, a most important point in the treatment of this affection is the removal, once for all, of the stinking socks or stockings, which have often been impregnated with perspiration for weeks, or even months. When this has been done, and when it has been fully ascertained that the simple applications above described are not sufficient to cure the disease, recourse may be had to the following procedure, which will invariably be attended with success.

A certain quantity of the simple diachylon plaister (Emp. Plumbi, Emp. Lithargyri) is to be melted over a gentle fire, and an equal weight of linseed oil is then to be incorporated with it, the product being stirred till a homogeneous mass is produced, sufficiently adhesive not to crumble readily to pieces. This is then to be spread over a piece of linen, measuring about a square foot. The foot of the patient, having been first well washed and thoroughly dried, is now to be wrapped in the dressing thus prepared. Pledgets of lint, on which the same ointment has been spread, are also to be introduced into the space between each pair of toes, to prevent their touching one another; and care must be taken that the foot is completely covered, and that the dressing is accurately in contact with the skin. When this has been done an ordinary sock or stocking may be put on the foot, and outside this a new shoe, which must be light and should not cover the dorsum of the foot. After twelve hours the dressing is to be removed; the foot is then not to be washed, but must be rubbed with a dry cloth, or some one of the above-named powders may be applied to it. The dressing is then to be renewed in the same way as before, and its application is afterwards to be repeated twice a day.

This procedure must be continued for from eight to twelve days, according to the severity of the case. During this time, however, the patient need not keep his room, but may go on with his business as usual. At the end of this period the dressings and pledgets are to be removed, the foot is to be again rubbed with some pulverulent substance, and the patient may then be allowed to wear his ordinary shoes and stockings.

In the course of a few days it will be found that a brownish-yellow layer of cuticle, about ½''' thick, is beginning to peel off from all those parts of the skin which were before affected with the disease, and that a healthy, clean, white surface of epidermis is exposed as this substance separates.

When this layer of cuticle has become completely detached the foot may for the first time be washed, but it will still for some time be advisable to dust some pulverulent substance into the stocking, or to rub it into the skin of the foot.

After the lapse of a fortnight or three weeks from the first application of the dressing the hyperidrosis will generally have disappeared, and the cure will last for a year or longer, or may even be permanent. In quite exceptional cases, however, it will be found that a single course of this treatment is not sufficient to effect the complete removal of the complaint. The whole procedure must then be gone through a second time; but this will certainly, and without exception, bring about a cure.

I have practised this mode of treatment for more than twenty years and in many hundred cases. In no instance have I seen any ill-effects arise, whether immediately after the application of the dressing or in the course of several years, during which the patients have been under observation. This I say for the satisfaction of those who might fear to adopt this plan.

B. Anidrosis.

As in the case of hyperidrosis, I shall confine my remarks upon anidrosis to those forms of it which concern dermatology, the immediate subject of this work.

Now, we often find that during the course of chronic skin affections, and as a result of their presence, the secretion of the sudoriparous glands becomes much diminished, if not entirely suppressed, or, at any rate, that no sweat is formed except on those parts of the cutaneous surface which are free from the complaint. Thus, in cases of ichthyosis the only regions which remain moist and perspiring are those which are unaffected with this disease, such as, for example, the axillæ, the flexor surfaces of the elbows, the genitals, the hams, the inguinal regions, the palms of the hands or the soles of the feet. Even at these parts the secretion is suppressed whenever they also are attacked with ichthyosis.

The same thing may be observed in those who are affected with prurigo; and as either ichthyosis or prurigo, for the most part, lasts throughout the whole life of the individual, it may be said that in each of these affections the perspiration is, in general, altogether absent. In cases of extensive eczema, again, no sweat is formed on any part of those regions which are the seat of the disease. Hence when this affection is very widely diffused over the cutaneous surface there may remain but a very small tract of healthy skin by which this secretion can be carried on. As, however, eczema after a time undergoes spontaneous involution or, at any rate, may be cured by appropriate treatment, we have in this instance an opportunity of observing an alternation between the cutaneous disease and the performance of the perspiratory functions. When the eczema begins to get well the cutaneous glands gradually resume their normal activity, and the healthy moist condition of the cutis returns, whereas the skin was dry to the touch, and poured forth no secretion, so long as it was affected with the disease.

It must not be supposed that the real explanation of these facts is different from that which I have given, and that the eczema appears because the sweat is suppressed, instead of the skin ceasing to perspire because it is already in a diseased condition.

The same thing is seen likewise in cases of psoriasis and of lichen ruber, and as these affections also are curable the relation between them and the suppression of the perspiration will naturally be the same as in the case of eczema.

The cure of the anidrosis will, of course, coincide with that of the chronic cutaneous affection which gave rise to it.

(2) *Qualitative Changes in the Secretion of the Sudoriparous Glands.*

I have already expressly stated, in the beginning of this chapter, that an exact chemical analysis of the sweat, or, indeed, of any one of the cutaneous secretions, is as yet a desideratum. It is, therefore, obvious that, in quoting the accounts given in different works of the affections which come under this head, I am playing the part of a medical historian rather than of a pathologist.

I have, in fact, never been able to satisfy myself that the sweat (that is, the secretion of the sudoriparous glands alone, without admixture of sebaceous matter) ever contains any foreign substances excreted with it by the skin. Certain writers, however, among whom are Fuchs, Erasmus Wilson, and Mason Good, say that they have detected several such matters in the perspiration, namely, in some cases blood or milk; in others a colouring matter, or a substance containing an odorous principle. Now, of course, I cannot assert the falsity of these statements, and, therefore, I shall content myself with simply bringing them under the notice of my readers.

Concerning bromidrosis, however, I have, in the proper place, already expressed my opinion, and I have here only to mention, further, that several authors have described cases in which the perspiration, without any discoverable cause, has given off odours of a perfectly specific kind. Thus, this secretion is said to have possessed in different instances the smell of vinegar, butyric acid, musk (Rayer, Speranza), and sulphur (Schmidt). Other writers, again, have associated certain odours with particular diseases, asserting that in scabies the perspiration has a mouldy, in syphilis a sweet, in gout a sour, smell. Lastly, in "putrid" and scorbutic affections a putrid smell has been ascribed to the cutaneous secretion, and it has been asserted that in jaundice the smell is like that of musk, in scrofulosis like that of sour beer,[1] and in intermittent fever like that of newly-baked bread. Anselmino found free acetic acid in the perspiration of a woman recently confined. According to Stark (whom I have quoted above) the amount of free lactic acid is increased in scrofulosis, rickets, and certain "skin diseases." Anselmino, again, detected ammonia in excess in the perspiration of gouty subjects, and Behrend observed the same thing in typhus and in putrid fevers.

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[1] Stark, 'General Pathology.'

Chromidrosis.

No instance of this affection having come under my own observation, I can only quote the descriptions of it given by other writers. Thus Rayer states that cases occur in which the sweat is of different colours—green, black, blue, or yellow—but he confesses that he has himself seen none of these varieties. Fuchs says that cases have been observed in which, sometimes over the whole body, sometimes at particular spots, the cutaneous secretion has been yellow, green, blue, brown, or black. Besides staining the linen, the perspiration dried on the skin of the persons thus affected into a coloured powder, which, however, could easily be scraped off, the healthy skin beneath being then exposed. Erasmus Wilson also admits that he has seen no instance of this affection.

Hæmatidrosis.

Under this name writers speak of the spontaneous escape of blood from the "pores" of the skin, that is, either from the sebaceous or the sudoriparous glands. This is, however, an affection which is assuredly very rare, though its occurrence may not be physiologically impossible. Moreover, it ought, in strictness, to be regarded not as a *bloody perspiration*, but as a *hæmorrhage* from the skin at certain points, namely, the mouths of the cutaneous glands.

The term hæmatidrosis should, I think, be applied to those cases only in which all the cutaneous glands (but especially the sudoriparous), being in a state of exalted activity, should, consequently, pour out a large quantity of fluid containing blood mixed with their usual watery secretion. No one, however, so far as I am aware, has ever seen such an affection as I have been supposing. The complaint described by writers as hæmatidrosis has always been simply a hæmorrhage from the skin. Such cases are, for instance, recorded by A. Finol,[1] Schilling,[2] and Lenhossék.[3] Erasmus Wilson,[4] again, has seen two instances of this affection occurring in ladies, in one of whom the bleeding spots were placed symmetrically upon the forehead, chin, and cheeks.

Such cases of spontaneous hæmorrhage from some minute points upon the surface of the skin have also come under my own observation. In one of them the patient was a lady, in whom the blood flowed from the caruncula lachrymalis. In another case, also that of a female, the hæmorrhage took place from time to time at the nipple. In both these instances, however, the bleeding occurred, as will be noticed, at parts which are very vascular, and covered with a delicate cuticle, so that some slight injury might possibly have been received unobserved by the patient. A third and much more remarkable case was that of a young man, strong and well-nourished, who was attacked repeatedly by hæmorrhage from the surface of the lower limbs. This generally occurred during the night, so that he first became aware that the bleeding had taken place by finding the sheets stained with spots of blood when he awoke. I once, however, saw blood flow from the uninjured back of the hand of this patient while he was sitting near me at table. The blood formed a jet, which would about correspond in size to the duct of a sweat-gland. This jet had also a somewhat spiral form, and rose about 1‴ above the surface of the skin.

These hæmorrhagic affections, therefore, do really occur, but, as I have stated, are rather uncommon. When, however, we read the statements of certain writers that many such cases have come under their observation, we cannot but think that they have been deceived, and that, in some instances, the hæmorrhage was produced artificially.

Thus, we read in certain books, although not, perhaps, in medical works, of cases in which bleeding has occurred, not only from human beings, but even from inanimate things. It has probably been seldom possible to discover the real source of such pretended hæmorrhages. As, however, I was once fortunate enough to see one of these cases sifted to the bottom, I will here give the following authentic history of the affair.

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[1] A. Finol, "Observation d'une dégéneration telle que le sang transoudoit par la peau;" Sédillot, 'Rec. périodique de la Soc. de Méd. de Paris,' 19, p. 71.

[2] T. Ch. Schilling, "De sudore sanguineo post graves convulsivos et spasmodicos affectus erumpente, feliciter tandem sublato," 'Acta Acad. Nat. Cur.,' vol. iii, p. 425.

[3] 'Physiologia Medicinalis,' vol. iii, p. 352.

[4] 'On Diseases of the Skin,' London, 1863, p. 615.

More than ten years ago there lived in a village not far from Vienna a woman who was said to take neither food nor drink, and who asserted that every Friday, between the hours of ten a.m. and noon, hæmorrhage occurred spontaneously from her skin at various points, but especially from her face, feet, and hands. The parts were, in fact, said to be the same as those from which blood flowed during the crucifixion of our Lord.

Now, as this occurrence created a great sensation in the neighbourhood, and attracted numerous pilgrims from all parts of the country, the authorities found themselves compelled to make a thorough investigation of the matter. Dr. Haller, a physician who held a high position in the General Hospital at Vienna, was sent to the spot, with the necessary staff of police, in time to place the woman under surveillance on a Thursday, and to bring her before the Friday to Vienna. Here she was placed in a room, so that she could be watched uninterruptedly, night and day, by medical men.

The Friday came, and the woman did not bleed. She, however, took nothing during that day nor till the evening of the Saturday, when, tormented by hunger, she asked for food, and ate a considerable quantity. From this time she took nourishment regularly, and the hæmorrhage never recurred.

The case just related is probably similar to not a few others which are recorded in the history of spontaneous hæmorrhages, but which were never brought into the clear light of scientific investigation, so as to be examined without prejudice and—*explained.*

The names given to the various forms of spontaneous hæmorrhage from the cutaneous surface have generally answered to the causes by which they were supposed to be produced. Thus, Fuchs[1] uses the terms hæmatidrosis, and dermathæmorrhois (*sudor sanguineus ex hæmorrhoidibus suppressis*). In another part of his work[2] he also speaks of a hæmidrosis menstrualis (*sudor cruentus ex catameniis suppressis*).

Both these kinds of hæmorrhage, the hæmorrhoidal as well as the uterine, may, in the opinion of this writer, be checked by various injurious influences, such as chills, mental emotions, &c., and he supposes that, as a result of the suppression of these discharges, metastasis occurs to the skin, giving rise to a discharge of blood from its surface.

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[1] Op. cit., p. 503. [2] Op. cit., p. 472.

These causes of hæmorrhage from the skin are, indeed, frequently mentioned, not only by Fuchs, but also in many of the older medical works, and, therefore, I feel myself called upon to point out how completely incorrect and devoid of all foundation such assertions are.

I freely confess (and many other physicians will assuredly do the same) that I am not acquainted with any artificial means of "suppressing" hæmorrhage (whether hæmorrhoidal or menstrual), nor, on the other hand, with the distinctions between such a "suppression" and a cure. Surely no one will maintain that it is a natural thing for any one to lose blood continually from the rectum, or even from the uterus. If this were the case medical and surgical writers could not with consistency discuss the various *remedies* by which these hæmorrhages may, in general, be stopped. I am, then, of opinion that we may, without any fear of causing metastasis to the skin, combat each of these complaints by the appropriate mode of treatment, and that bleeding from the hæmorrhoidal veins should be checked in all cases, and hæmorrhage from the uterus whenever its quantity is excessive.

Galactidrosis, *Galactorrhœa erronea*, *Sudor lacteus* (Milchschweiss).

Under these names there are described, especially in the older works, certain diseases of lying-in women, said to be caused by a metastasis of the milk, sometimes to one of the internal organs, sometimes to the skin.

So long as the puerperal diseases of the uterus, ovaries, &c., were not known, all maladies arising after childbirth were referred to a "metastasis" of the milk. In the last century Van Swieten, Levret, Selle, and others, gave minute descriptions of affections of various organs supposed to be produced by "retrocession" of this secretion. But now that pathological anatomists are familiar with the morbid changes which occur in the puerperal state, and that chemistry and the microscope have made clear the composition of the milk, no one any longer fancies that this secretion is liable to "metastasis," and that he sees it exuding from the swollen axillary glands of a woman recently confined (Siebold), or from her nose after violent sneezing (Fleischmann).[1] Puerperal affections are at the present day regarded as pathological processes arising from a special cause, but not as differing in any essential respect from inflammatory and suppurative diseases produced by other conditions.

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[1] 'Hufeland's Journal,' 1836, Part vi.

As a further proof that there is no such thing as a metastasis of the milk to the skin I may state that no one of the many physicians who have attended in the lying-in hospital of Vienna (in which there are, on an average, 8000 births annually) has ever seen milk exude from the skin, although epidemics of puerperal fever have carried off many victims. Nor, again, have any of the physicians engaged in our school of pathological anatomy (who find material for their world-renowned labours in thousands of post-mortem examinations) ever found occasion to demonstrate a metastasis of the milk in the dead body. I think, therefore, that I am justified in expressing the doubt whether any diseases have ever arisen from this cause, and in regarding galactidrosis as an affection altogether mythical.

Uridrosis (*Sudor urinosus*, Harnschweiss).

This name is given to an affection in which, while the renal secretion is defective, the perspiration possesses a urinous smell. This character may either belong to the sweat generally or only to that which is formed at certain parts of the cutaneous surface.

The older writers, Salmuth,[1] Haesbart,[2] Marc. Donatus, Sauvages, Arnold,[3] and others, record cases in which, the urine being deficient in consequence of disease of the kidneys, the skin took up the function of these organs and became covered with an abundant urinous perspiration.

Even by the thorough investigations of the chemists and physiologists Lehmann,[4] Schottin,[5] Schlossberger, Liebig, Scherer, and Wöhler, it has not yet been proved to demonstration whether or no urea exists, as such, in the blood. Most writers are, however, of opinion that this is the case, and that the kidneys are merely excretors of this substance. Urea has, indeed, been often shown to be present in the circulating fluid; and the fact that attempts to detect it have sometimes failed by no means justifies the conclusion that this substance is formed elsewhere, and not in the blood, from the decomposition of nitrogenized substances.

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[1] Cent. ii, observ. 82.

[2] 'Ephemer. nat. cur.,' Dec. ii, A. x, obs. 73.

[3] 'London Med. Repository,' 1828, April.

[4] 'Lehrbuch der physiolog. Chemie,' Band i, 1850, pp. 165 et seq.

[5] 'De Sudore,' diss. inaug., &c., Lipsiæ, 1841.

Such being the case, it is anything but unreasonable to suppose that when the secretion of urine by the kidneys is interfered with the different solid tissues will be traversed by blood overloaded with urea, and, therefore, that this substance will be present in the sweat, as well as in the other fluids.

Those who have made direct experiments in reference to this point have, however, very rarely succeeded in detecting urea in the perspiration, and certain chemists, among whom is Lehmann,[1] even maintain that this has never yet been done. But the investigations of Schottin,[2] Drasche,[3] Treitz,[4] Hirschsprung,[5] and others, have furnished positive proofs that, under certain conditions, urea may be discovered in the cutaneous secretion. I may quote, especially, the observations made during the year 1855, when the cholera was raging in Vienna, by Drasche. In certain severe cases of that disease this physician observed, on the surface of the scalp and face, a scaly deposit, resembling fine white meal. On examining this substance he found it to contain crystals of oxalate of urea, of which the nature was determined both by their form and by their chemical reactions.

It must be admitted, however, that such an alteration of the cutaneous secretion is exceedingly rare; and it has still to be shown which of the glands of the skin were concerned in the excretion of the urea. The crystals were, however, found by Drasche at those parts where the sebaceous glands are most abundant and of the largest size, and their presence was associated with the formation of sebum in excessive quantity. These facts are, of course, rather in favour of the supposition that the urea was, in these cases, excreted not by the sudoriparous, but by the sebaceous glands.

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[1] Op. cit., Band ii, p. 382.

[2] 'Archiv f. phys. Heilkunde,' 1851, 1853.

[3] 'Wiener Med. Wochenschrift,' 1856.

[4] 'Prager Vierteljahrsschrift,' 1859.

[5] 'Wien. Med. Wochenschrift,' 1865, No. 99.

CHAPTER VI.

CLASS III (*continued*).—ANOMALIÆ SECRETIONIS GLANDULARUM CUTANEARUM.

C.—Affections caused by Morbid States of the Secretion, or by changes in the Structure of the Sebaceous Glands.

The diseases now to be described are of two kinds: on the one hand, the functional activity of the sebaceous glands may be perverted; on the other hand, these organs are subject to certain morphological changes, due, for the most part, to a retention of their secretion.

Again, the alterations in the functional activity of the sebaceous glands may themselves be further subdivided. In some cases an excessive amount of sebum is produced, in others its quantity is unduly small. I shall, in the first place, describe those complaints which come under the first head, reserving for future description those which belong to the second.

I. *Cutaneous Affections caused by the secretion of Sebum in excessive quantity.*

As is well known, the sebaceous glands are directly connected with the hair-sacs, of which, indeed, they may even be said to form a part; and the sebaceous secretion is discharged upon the cutaneous surface through apertures common to both these structures.

Now, the effects of an excessive formation of sebum vary widely in different forms of the diseases to which it gives rise. In some of them the ducts remain open, and there is no obstacle to the escape of the secretion, as fast as it is formed; but in other cases its excretion is prevented, so that it accumulates within the ducts, and ultimately within the glands themselves; and this result may be produced either by the plugging-up, from some cause, of the mouths of the ducts, or by a loss of the contractile power (Contractionsfähigkeit, peristaltische Bewegung) of the secreting organs.

Mr. Erasmus Wilson[1] has, indeed, made use of the expressions "*excretory aperture remaining open*," "*excretory aperture being closed*," to indicate the important differences to which I have referred. But this distinction is not sufficient; for, as I have just stated, the sebum may be retained, even though the canal be patent, in consequence of the gland having lost the power of expelling its secretion; and, on the other hand, the duct may be closed without any accumulation of sebum taking place, if, at the same time, the gland should cease to secrete.

For these reasons, therefore, I divide the diseases now to be described into those in which there is no impediment to the excretion of the sebum and those in which the excretion of this substance is prevented.

(1) *Affections in which the Sebum is secreted in excessive quantity, there being no impediment to its excretion.*

The cutaneous diseases which come under this head are now pretty uniformly described by all dermatologists, but under various names, such as seborrhœa, seborrhagia, stearrhœa, steatorrhœa, steatorrhagia, Cutis unctuosa, Fluxus sebaceus, Varus sebaceus, Acne sebacea, Ichthyosis sebacea, Schmeerfluss, &c. Of these terms, *seborrhœa* is the one which I shall employ in this work.

Seborrhœa.

History.—In the writings of Hippocrates,[2] Galen,[3] Celsus,[4] Priscianus,[5] Actuarius,[6] and Trallianus,[7] mention is made of the occurrence of *defluvium capillorum*, which is one of the symptoms constantly present in the form of seborrhœa affecting the scalp. Again, the Greeks designated by the name of πιτυρίασις a cutaneous affection occurring on the head as well as on other parts of the body, and characterised by the formation of scales; while Celsus,

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[1] The 'Student's Book of Cutaneous Medicine,' &c., 8vo, Lond., 1865.

[2] Aphor. xi, xii.

[3] Lib. i, 'De Comp. Med.,' sec. loc.

[4] Lib. vi, cap. i.

[5] Lib. i, 'Medic.'

[6] Lib. ii, 'Method.'

[7] Lib. i, cap. 2 et 4.

Paulus Ægineta, and the Arabian writers, applied the term *Porrigo* to a similar complaint. But we do not find, either in the works of these authors nor in those of the surgeons and dermatologists of a later period (such as Guy de Chauliac, Ambroise Paré, Mercurialis, and Lorry), any accurate description of those diseases which give rise to an excessive formation of scales and a falling off of the hair, and which we now recognise under the name of *seborrhœa.*

Plenck,[1] indeed, writes as follows:—"*Porrigo farinosa seu spuria est congeries materiæ unguinosæ pulverulentæ . . . . quæ crustam sordidam atque fœtidam sub pectine farinæ crassæ formâ delabentem constituit. Materies hæc farinosa vel furfuracea humor sebaceus glandularum capitis esse videtur.*" But this short and aphoristic definition was not sufficient to explain the essential nature of the affection to his contemporaries. They, for the most part, coincided in the view taken by Willan and Bateman,[2] who placed this complaint among the squamous diseases of the skin, and adopted for it the Greek word Pityriasis.

Alibert, however, employed, instead of this name, that of *Tinea* or *Porrigo,* and described two distinct forms of this affection, the *T.* seu *P. furfuracea,* and the *T.* seu *P. amiantacea.* The second of these diseases was first mentioned by Alibert; but it is easy to recognise that both it and the *T. furfuracea* are mere varieties of a Seborrhœa capillitii, and this is the case also with the *Teigne amiantacée* and the *T. furfuracée* of Mahon,[3] to which Alibert also refers.

On the other hand, Biett[4] (who was a follower of Willan in the use of the term *pityriasis,* and who described a pityriasis of the eyebrows and of the chin, as well as of the scalp) was the first to mention the occurrence of a seborrhœa on parts of the body uncovered with hair, and he gave to this affection the name of *maladie folliculeuse, ou acné sébacée.*

In the first edition of his work Rayer[5] described, under the title of "*sécrétions morbides des follicules sébacés,*" several diseases due to morbid conditions of the sebaceous glands, and their secretion; but in the second edition[1] he applies the term *flux sébacé* to those affections in which the sebum is secreted in excessive quantity.

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[1] 'Doctrin. de Morb. Cutaneis,' 1783, p. 86.

[2] 'Delineations of Cutaneous Diseases, exhibiting the appearances of the principal genera and species in the Classification of Dr. Willan,' by Dr. Bateman, 1817, plate xv.

[3] 'Recherches sur la Nature des Teignes,' Paris, 1829.

[4] 'Abrégé pratique,' &c., Paris, 1817, 4ème édition, p. 304.

[5] 'Traité théorique et pratique des Maladies de la Peau,' Paris, 1827, tome ii, p. 246.

From the cases recorded in detail by Rayer (and especially from those numbered 191, 193, in the first edition, and 182, 183, in the second), it is evident that he had observed the most varied forms of seborrhœa affecting the scalp and face. I must not omit to mention, also, that this writer attributed to a *fluxus sebaceus* two cases of which Bateman had given a drawing, in Plate 28 of his 'Atlas,' and which he and Dr. Thomson had regarded as instances of an Ichthyosis faciei.

In the most recent books on dermatology (such as those of Riecke, Fuchs, Simon, Gibert, Cazenave, Chausit, Duchesne-Duparc, Devergie, Erasmus Wilson, Thomson and Parkes, and Tilbury Fox) the disease with which we are now concerned has been very generally distinguished from pityriasis, and described more or less minutely under the different names I have already cited. But it is, at the same time, evident, from numerous passages in their works, that many of these writers were fully aware of the difficulty which often exists in drawing the line of separation between *seborrhœa* and *pityriasis*.

On carefully examining the mode of development of seborrhœa on different parts of the cutaneous surface, we find that the appearances to which this complaint gives rise vary greatly with differences in its intensity and situation, as well as with the individual peculiarities presented by the patients affected by it. Indeed, a study of the varieties thus produced enables us to show that some of the diseases usually described under the names of pityriasis or ichthyosis ought, in reality, to be regarded as forms of seborrhœa.

In support of this opinion, I may refer to the anatomical views which have been so ably taught by Virchow.[2] "The hair-sacs," says this writer, "are well known to be involutions (Einstülpungen) of the skin; their surface is covered with a continuation of the cuticle; and the hairs which grow from their base may be considered as prolongations of this structure. Thus, the secretion of the surface is, even here, epidermis. In the interval" (between the hair and the cells which line the hair-sac) "is found, in greater or less quantity, a fatty or greasy substance, formed by the sebaceous glands, the ducts of which open into the cavity containing the hair. This fatty matter may be either free or enclosed in cells; its amount, as might be expected, varies greatly, according to the degree of irritation to which the skin is exposed, and also in proportion to the number and size of the glands at the part, and the extent to which their secretion may happen to accumulate. In some cases there is scarcely any trace of this fatty substance, and the epidermoidal character certainly preponderates in the majority of these diseases."

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[1] 1835, tome iii, p. 699 (*vide* 1026 of Dr. Willis's translation).

[2] 'Die krankhaften Geschwülste: Dreissig Vorlesungen' &c., Berlin, 1863, Band i, s. 216.

The description given by Kölliker of the sebaceous glands and their secretion also shows that no satisfactory distinction between this product and the epidermis can be drawn, either during its formation or during its passage along the glandular canals. "The sebum," says Kölliker,[1] "is a secretion which consists, not, like many others, of a watery fluid containing formed elements, but, so to speak, of formed elements alone. In fact, it is either made up entirely of cells loaded with fat, or includes, besides such cells, an admixture of free oil-globules."

"The elements of this secretion are formed within the vesicular extremities of the glands, as the result of a process of cell-development and cell-metamorphosis, which we must suppose to take place in the following manner:—At the bottom of the cæcal terminations of the glands cells are always being generated. These cells are at first pale, and contain but few granules; but as they gradually become pushed towards the interior of the glandular vesicles by the growth of fresh cells beneath them, they very soon acquire an increased number of moderately large, round, dark, fat-granules, with which they at last become completely filled. In this way the cells advance towards the excretory ducts; but, before they can be properly said to constitute sebum, they have to undergo further changes. On the one hand, the scattered fat-granules, which they contain, coalesce so as to form a few globules only, or even a single drop; on the other hand, the cell-membranes, which at first (like those of the epithelium of the glandular passages) were readily dissolved by alkalies, become more resisting, and, at length, resemble in their chemical properties the plates of the horny strata of the epidermis."

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[1] 'Mikroskopische Anatomie,' Leipzig, 1850, Band ii, 1te Hälfte, p. 188 (*vide* p. 226 of the first volume of the translation for the Sydenham Society, by Busk and Huxley).

"Now, if this description is correct, the process by which sebum is formed reminds one, in many respects, of that which is concerned in the growth of the cuticle. Thus, the young, easily soluble cells, at the bottom of the glandular follicles, may be compared to those of the Malpighian layer of the epidermis, while those less soluble, filled with fat and found in the secretion itself, correspond to the cells of its horny stratum. Two other points may also be urged in favour of this view. One is the fact that the deep layer of the epidermis which lines the hair-sac is continued into the ducts of the glands and even as far as the outermost cells of their terminal follicles; the other is the circumstance that the epidermis itself is, in some situations, constantly being detached and forming secretions (I refer to the *smegma præputii penis et clitoridis*), which, to all appearance, are chemically allied to the sebum. . . . . These facts," continues Kölliker, "show that there is some reason for comparing the cells of the sebaceous secretion with those of the horny stratum of the cuticle, and likening the process by which the sebum is formed to the growth of the epidermis; and a further argument in favour of the same view might be derived from the way in which these tissues are developed."

Now these conclusions, derived from anatomical and physiological investigations, are supported by the results of clinical observation, and, therefore, the following appears to me to be the only admissible definition of seborrhœa.

Seborrhœa consists in a morbid secretion of epidermis, which is impregnated with sebum, and either forms a greasy coating or accumulates in scale-like masses upon a part of the skin which is, in other respects, healthy.

Before passing on to describe in detail the appearances produced by this cutaneous affection, I must, in the first place, point out that it occurs in two distinct forms, of which I term one the *S. oleosa* seu *adiposa* (Acné sébacée fluente of Cazenave); and the other, the *S. sicca* seu *squamosa* (Acné sébacée sèche of Cazenave).

Different as are the symptoms of these two varieties, there is yet no difficulty in proving that they are but modifications of one and the same disease. For we frequently observe all or, at any rate, many of the characters belonging to each of them in the same patient. Again, a *S. oleosa* may often be noticed to pass into a *S. sicca*; and, lastly, on subjecting the morbid products which appear in these two affections to a microscopical and chemical investigation these products are found to consist, in each instance, of exactly the same elements, namely, of epidermic cells saturated with fat-globules. This is the case whatever the seat of the disease, whether it takes the form of a S. capillitii or a S. præputii, or of the so-called *pityriasis furfuracea, s. amiantacea*, or even of a diffused *pityriasis tabescentium* covering a large part of the cutaneous surface.

Both the *S. oleosa* and the *S. sicca* attack, in some instances, only those parts of the head which are covered with hair, while, in other cases, they occupy the face or some other region richly supplied with glands, but having no hair; or, lastly, involve the whole surface of the body. These variations in the seat of the affection are attended with certain differences in its characters, and, therefore, I have to speak of a *S. universalis* and a *S. localis*, and to divide this last again into a *S. capillitii*, *S. faciei*, &c.

(1) *Seborrhœa oleosa seu adiposa.*

(*a*) On parts of the body not covered with hair.

When affecting these regions, the S. oleosa consists in the formation of a shining greasy layer, which covers the skin and gives it just the same appearance as if it had been smeared over with some ointment. The oily material may be easily removed by rubbing the part with a fine dry cloth or with a piece of blotting-paper, which then presents an unmistakeably greasy stain.

This form of seborrhœa is observed most commonly in young subjects, in whom it occurs on the surface of the forehead, nose, and cheeks.

In these cases, when the skin is carefully examined, the openings of the sebaceous glands may be clearly seen to present minute oily points, and some of the ducts are often found to be filled with large plugs of sebum. It is therefore clear that this secretion is being formed in excessive quantity.

I may also mention another circumstance observed in patients affected with the *S. oleosa*. This is that, unless the greatest care be taken to keep it clean, the face of these persons is always dirty, and is apt to be discoloured by any substance with which they are much brought into contact by their occupation. We all know that solid particles, floating in the air, are absorbed more readily and

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retained more obstinately by a greasy spot upon than by other parts of it, and we can understan way the skin of the face, when always covere will attract the dust or dirt, and assume an un is often observed in factories where a great deal the men employed in such an establishment som found to be much blacker and dirtier than ot workmen are obliged to wash the face with soap and d in order to get rid of the particles of coal-dust which it, while their comrades have merely to use a dry cloth in or clean themselves sufficiently.

When it has been of long duration, the *S. oleosa*, however, gives rise to appearances which differ from those hitherto described. Under these circumstances *crustæ lamellosæ*, which may be either as thin as paper or as much as half a line in thickness, form on the forehead, cheeks, and nose, and even on other parts of the face. Similar masses also collect on the surface of the genital organs, constituting the *smegma præputii et clitoridis;* and, lastly, a deposit of the same kind, which is then termed the *vernix caseosa,* is found on the skin of newly born infants. These masses of sebum may present various colours; thus, they may be pale yellow (S. flavescens, Wilson), brownish-yellow, gray, grayish-green, or even black (S. nigricans). Their upper surface is uneven and rough; their under surface, which is in contact with an otherwise healthy skin, has projecting from it certain small conical processes which pass into the dilated ducts of sebaceous glands. These prolongations can, of course, be seen only when the crusta lamellosa is detached from the skin slowly and with care.

This form of seborrhœa has received different names, according to the colour of the crustæ lamellosæ. Cazenave described and figured it under the title of *Acné sébacée;* Rayer, under that of *Ichthyosis sebacea;* Bateman, under that of *Ichthyosis faciei.* Again, the case of *Melasma palpebrarum* reported by Neligan ought probably to be regarded as an instance of *seborrhœa,* the black colour being due either to dirt or to the accidental presence of dark coloured pigment in the epidermic cells, cast off as a result of the seborrhœa. The fact that the black scales, which were repeatedly formed, could in this case be removed without any injury to the skin beneath, by rubbing or even wiping its surface, is in favour of the view that these scales consisted simply of the secretion of sebaceous glands.

(*b*) On parts of the body covered with hair.

This form of the *S. oleosa* may either occur alone or accompany a similar affection of parts which have no hair upon them. It does not, however, present such well-marked appearances as the variety last described, for so long as the secretion remains fluid it naturally sticks to the hairs. But in infants, in children or adults who have very thin hair, and in persons who are bald, we have an opportunity of seeing the cuticle of the scalp covered with an oily coating, as a result of this disease.

When it affects newly born children this complaint is (as is well known) termed the S. neonatorum (or, in German, *Gneis*). According to the length of its duration this variety of seborrhœa gives rise to different appearances. Thus, it is at first attended with the formation of thin *crustæ lamellosæ*, which are of a yellowish-gray colour; but after a time, and particularly if the affection is of a severe kind, dark green or even black crusts present themselves, by which the hairs are all matted together.

I may take this opportunity of referring to the opinion of M. Cazenave,[1] that the *Plica Polonica* is a form of seborrhœa. Now, it is quite true that when the *S. capillitii* (Gneis) has existed for a long time, so that the hairs are matted together in an extreme degree, it may sometimes be supposed to be a *Plica Polonica*, not only by unprofessional persons, but even by those medical men who believe in the existence of that disease; but this by no means warrants M. Cazenave in formally laying down that "*la plique n'est autre chose qu'une hypersécrétion de la matière sébacée, en un mot, qu'une acné sébacée du cuir chevelu.*" It is much to be regretted that this writer did not attend to the spirit of the passage which he himself quotes from Lorry[2]—"*Durum est de eis scribendum habere, quæ ipse non videris.*" Had he done so, he would not have fallen into the error committed by so many of his countrymen, of making positive statements about a disease of which no case had ever come under his own observation.

For all those physicians who live in Poland, where (both by the public and by the medical men of the country) the term "*Plica*" is still frequently employed as the name of a definite affection; and also those who, by their position or place of abode, or in the course of their travels, have been brought into contact with cases of this kind;—all these observers have come to the conclusion that the disease which they have seen may be due to a variety of causes, and does not arise simply from an accumulation of sebum. As for myself, I have learnt, both from my own experience and from the writings of Beschorner,[1] Dietl,[2] Weese,[3] and Hamburger,[4] that several different conditions, affecting the lower animals as well as man, have been included under the name of Plica Polonica. Thus, various diseases of the scalp (such as eczema and favus, and even syphilitic ulcers) have been supposed to be examples of this complaint; while in other instances the matted and tangled state of hair naturally long and abundant has been simply due to neglect, or has been produced by the patient's rubbing wax or honey into the hair, and braiding false hair with it. Having myself had occasion to observe many cases of this kind, I am now quite satisfied that *there is no disease which deserves the name of Plica Polonica.* Indeed, the fact that this complaint does not exist has now been fully established by careful investigations and observations; and it is much to be hoped that the profession generally will adopt this conclusion, and no longer attribute to a special disease cases in which the hair happens to be matted together by the causes I have mentioned, and in which the persistence of this condition is due merely to prejudice, superstition, and neglect of cleanliness.

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[1] 'Traité des Maladies du cuir chevelu,' Paris, 1850, p. 315.

[2] 'Tract. de morbis cutaneis,' p. 607, et seq.

(2) *Seborrhœa sicca, S. squamosa.*

This affection sometimes consists in the formation of pellicles (Schwarten) of dried sebum which are of a dirty white or pale yellow colour, look as if they were made of pap which had undergone desiccation, and are rather firmly adherent. The surface of the skin beneath them is healthy, or, perhaps, slightly reddened. Like the *crustæ lamellosæ* which appear in the *S. oleosa,* these pellicles have certain small needle-like processes (Comedones, Talgpröpfe) connected with their under surface.

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[1] 'Der Weichselzopf, nach statistischen und physiologischen Beziehungen,' Breslau, 1843.

[2] 'Wiener Med. Wochenschrift,' 1858, Nos. 4, 5, 6.

[3] 'Rust's Magazin,' 1864.

[4] 'Günsburg's Zeitschrift,' 1858.

The appearances produced by the *S. sicca* are, however, in other cases, of a different kind. The dried sebum then takes the form of branny scales, resting upon a skin healthy in all other respects. These scales are easily removed by scratching or combing the surface, and they also fall off spontaneously in a pulverulent state. This variety of the affection has been described by authors under the name of *Tinea*, s. *Porrigo*, s. *Pityriasis furfuracea*.[1]

The *seborrhœa sicca* also presents characters somewhat different, according as the part affected by it is, or is not, covered with hair.

(*a*) On parts not covered with hair.

This affection may either be confined to a small part of the cutaneous surface or diffused over a large area. It consists in the formation of a fine mealy powder, partially adherent to the epidermis, which itself generally has a greasy feel, and displays a fatty lustre.

When a large part of the integument or even (as sometimes happens) its whole extent is affected in this way, the disease is that which has been termed the *pityriasis tabescentium, scrofulosorum, tuberculosorum*. The skin then appears loose and flaccid, owing to the absorption of the subcutaneous fat, and its surface is constantly covered with a great number of minute scales of epidermis on the point of being cast off.

(*b*) On parts covered with hair.

When this affection attacks the scalp the same minute, white, mealy scales are formed as in the variety of seborrhœa just described. Some of these scales cling to the hairs, while others remain upon the surface of the skin; the scurf thus produced is constantly falling off, and some of it is detached whenever the hair is combed, so that the clothes on the neck and shoulders of the patient become covered by it. Moreover, in these cases there is always more or less *defluvium capillorum*. Indeed, the falling off of the hair is usually the first thing to attract notice, and is more troublesome to the patient than the formation of the scurf, which is not always abundant.

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[1] Hebra's 'Atlas für Hautkrankheiten,' taf. viii, figs. 1 and 2.

General Characters of Seborrhœa.

Distribution.—Seborrhœa sometimes affects the whole cutaneous surface, but is more frequently limited to some particular region.

Under the head of *general seborrhœa* I may refer to the *vernix caseosa*, by which newly born infants are covered. In ordinary cases this appears as a fatty pellicle, spread over the surface of the skin, and may be regarded as a deposit from the *liquor amnii* which surrounded the fœtus. It gives the cuticle a soft and oily feel, and may, perhaps, render the passage of the child through the maternal passages less painful.

It is usual to remove the *vernix caseosa* at once by washing the infant with soap and water; but if this be not done the fatty pellicle very soon peels off in scales of greater or less size, and the skin is then found to present its natural appearance.

In certain rare cases, however, the whole surface of the integument, within a few hours after birth, becomes as smooth as satin, and of a dark brownish-red colour, and is, at the same time, traversed by numerous cracks and fissures, which make their appearance more particularly on the fingers and toes, on the buttocks, and over the flexures of the joints. These fissures interfere very much with the child's movements, and give it great pain, as is evident from the cries which it utters on attempting to move. If, however, lard be rubbed into the skin an infant affected in this way will generally become quiet at once, and the surface of the skin will be almost restored to its natural condition. Indeed, this simple procedure may be sufficient to remove the disease entirely, if of no great intensity.

But in some instances this affection is so severe that it is much more difficult of cure; and it then not only causes great pain, but may even lead to serious consequences by preventing the child from sleeping, and by interfering with its taking the breast. Under these circumstances the appearance presented by the skin is very like that produced by a scald, and it may be also compared to the smooth shining aspect of the surface of a half-roasted sucking-pig. A good representation of it is given in one of the plates of my atlas.[1]

This is the disease which has been described by authors under the name of *Ichthyosis congenita*—a name which I cannot admit to be suitable for it. In the letter-press accompanying the plate to which I have just referred I have expressed myself upon this point as follows:

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[1] Heft iii, 1859, taf. ix, fig. *c*.

"The case of which this plate is a representation answers to the description of the *Ichthyosis congenita* given by Heinhausen,[1] Behrend,[2] and Schabel;[3] but it differs from the affection known under the name of *Ichthyosis acquisita,* not only in the form and arrangement of the scales of unhealthy epidermis which are cast off, but also in the condition of the cutis, which, in the infant, presents no hypertrophic papillæ, such as are observed in the ichthyosis of adults.

"Another reason for believing that these diseases are altogether distinct is the fact that children affected with the so-called *I. congenita* all die within a few days, whereas grown-up persons suffering from the *I. acquisita,* even in a severe form, may retain their usual health for many years.

"Hence, it appears to me to be desirable either, as proposed by Dr. Heinhausen, to reserve for the affection of infants the name of *Scutulatio,* s. *Incrustatio,* or to term it the Ichthyosis *sebacea* neonatorum, so as to indicate that in this disease the horny layers of the cuticle contain a large quantity of sebaceous secretion."

The opinion expressed in the remarks which I have just quoted is supported by all my subsequent experience, and I therefore regard the complaint which I am now describing, and of which the plate in my atlas is an illustration, as a *seborrhœa* of newly born children, and not as a form of *ichthyosis*.[4]

A general seborrhœa may likewise occur in adults; but in them it gives rise to appearances of a different kind, taking the form rather of a *S. sicca* s. *squamosa.* It is attended with the production of white branny scales, which form more especially on the chest, face, and back, but also to a less extent upon the limbs. In these cases, however, there are, in addition, some of the symptoms of a

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[1] 'De singulari epidermidis deformitate,' Berolini, 4to, 1.

[2] 'Ikonographische Darstellung der nicht-syphilitischen Hautkrankheiten,' Leipzig, 1839.

[3] 'Ichthyosis congenita, eine Inauguralabhandlung,' Stuttgart, 1856.

[4] Mr. Er. Wilson has described cases in which such excessive accumulations of dried sebaceous secretion occur (whether in adults or infants), under the names of *Ichthyosis sebacea* (Sauriderma, *I. spuria*), *I. squamosa,* and *I. spinosa* (op. cit., fig. 5, plate vi, p. 629).

S. oleosa, for the parts of the skin between the scales have the greasy shining aspect which belongs to that disease.

It is this which has been termed by authors the *pityriasis tabescentium, scrofulosorum,* s. *tuberculosorum;* but it may, in reality, occur in the case of any individual previously muscular and well nourished, who has suffered for a considerable time from a wasting and debilitating disease. In other words, it is not peculiar to patients who are tubercular or scrofulous, but is likewise observed in those who are affected with syphilis, chlorosis, or cancer.

The local variety of seborrhœa of the scalp (*S. capillitii*) occurs both in infants (as the so-called Gneis) and in adults; in either case it consists in the formation of yellow, brown, or black *crustæ lamellosæ* about as thick as paper, by which the hairs are matted together. This form of the affection is, however, most commonly observed in children who are not properly cared for. In older persons it more generally appears as the so-called *pityriasis capillitii,* giving rise to the production of more or less numerous white branny scales, which are spontaneously cast off from the surface of the head, and are also readily detached by combing, scratching, or rubbing it, so that the patient's clothes are always covered with a coarse mealy powder.

It is, moreover, indisputable that seborrhœa is a much more serious affection in adults than in children, with whom, indeed, it appears to be a physiological rather than a pathological condition; whereas in grown-up persons its presence is generally associated with morbid symptoms of a different kind, and especially chlorosis.

Seborrhœa of the face is met with less frequently during early childhood than in youths and adults. It sometimes takes the form of a *S. oleosa,* affecting the forehead, nose, cheeks, and chin; while in other instances it is attended with the production of whitish-yellow *crustæ lamellosæ,* or grayish-yellow, greenish, or even black scales (as in the *Stearrhœa flavescens* and the *S. nigricans* of Wilson[1]). Lastly, in some cases it may even lead to the formation of pellicles as much as half a line in thickness. These are of a brownish-yellow colour, and fissured on the surface. They are sometimes isolated from one another, sometimes continuous over the whole of the part affected.

Certain cutaneous diseases, and especially smallpox, are also, in some cases, followed by the appearance of morbid products of a similar nature to those just described, but corresponding in form and distribution to the original malady. These may either consist of small, isolated, scutiform crusts, or cover uninterruptedly large tracts of the cutaneous surface. They adhere rather firmly to the skin, and remain long after the disease which gave rise to them has come to a termination. Thus, I have seen a patient's face disfigured by crusts of this kind, which were still closely attached to the epidermis, as long as six months after recovery from variola.

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[1] Op. cit., pp. 626, 627.

The genital organs of both sexes are also a frequent seat of seborrhœa. Thus, in the male it affects the *glans penis*, the *sulcus coronarius*, and the inner lamina of the prepuce, on which parts a whitish, greasy substance (known as the *smegma præputii penis*) collects in considerable quantity; while in the female the white, cheesy material accumulates principally in the shallow grooves between the labia and nymphæ, in the vestibulum, and between the clitoris and its preputial covering.

According to Kölliker,[1] the *smegma præputii penis et clitoridis* is only in part formed by sebaceous glands, but consists mainly of epidermic cells and fat-globules, and generally contains but few of the cells which properly belong to the sebum. In support of this opinion he urges the fact that a substance of this kind is found on the clitoris, although that organ possesses no glands; moreover, he asserts that, even in the penis, the glands of Tyson are often very few in number, and that, according to microscopical investigations, whether these glands, in any particular case, are or are not abundant, cells resembling those of the epidermis of the glans penis and the inner lamina of the prepuce form an immensely preponderating part of the smegma. For these reasons Kölliker thinks that, even in the male, the glands of Tyson take only a very subordinate part in the formation of this material.

Without, however, at all wishing to disparage the results of microscopical investigations, I yet feel bound to maintain, on the ground of clinical observation, that the genital organs are liable to be affected with seborrhœa. For our purposes it is surely sufficient that anatomy has demonstrated in these regions the presence of sebaceous glands; their number is not a matter of any importance; and even if the clitoris itself contains none of them they are yet sufficiently abundant on the inner lamella of its prepuce to secrete, if diseased, the material by which the organ itself is covered.

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[1] Loc. cit.

When the smegma is thus formed in excessive quantity, the affected parts of the prepuce of the penis or clitoris undergo changes essentially different from those hitherto described. In the male the *glans penis* appears reddened and swollen, and the prepuce is œdematous; in the female the clitoris and its prepuce become painful and enlarged, so that this organ is unusually prominent; and the nymphæ also are found to be œdematous. Moreover, all the parts affected become covered with an oily, almost fluid, material, which is often secreted so abundantly that it escapes drop by drop. Thus, in men who have also a congenital phimosis, this affection may resemble, and even sometimes be mistaken for, *gonorrhœa;* and hence arose the German name (Eicheltripper) for this disease, which has received the scientific appellation of *Balanitis penis* seu *clitoridis*. Indeed, an inflammation of the surface of the part, and its preputial covering, is evidently present in these cases.

In women, again, the discharge may be so abundant as to suggest, at first sight, the presence of a *blenorrhœa vaginæ*. It is necessary to bear in mind that little girls, as well as grown-up women, are liable to suffer from this modification of seborrhœa.

That the apparently dissimilar affections of which I have been speaking have really a common origin, and are due to seborrhœa, may, to some extent, be inferred from clinical observation, which certainly shows that the more common, chronic form of disease frequently passes into the acute, and *vice versâ*.

Seborrhœa congestiva.—I may take this opportunity of referring to the complaint which I have elsewhere[1] described under this name.

This affection first came under my observation in my clinique where certain patients presented themselves who, although in other respects healthy, had sharply defined patches of a deep red colour on the face, especially on the cheeks, nose, and chin. The ducts of the sebaceous glands which occupied the skin of the diseased parts were noticed to be obstructed by masses of their secretion; and some of the patches were often covered with plates of sebum already excreted. Hence it occurred to me that this morbid condition was probably the result of a seborrhœa, differing from the ordinary forms of that complaint only in the extremely congested and hyperæmic state of the integument of the regions affected by it.

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[1] 'Zeitschrift der k. k. Gesellschaft der Aerzte,' Band i, 1845, p. 40. Canstatt's 'Jahresbericht über die Leistungen der Dermatologie im Jahre 1845,' p. 226.

In no work, at that time published, could I find any account of this complaint, of which the symptoms appeared to me so remarkable and distinctive as to merit a special description; and thus I was led to propose for it the title of *seborrhœa congestiva*.

Six years later, in 1851, M. Cazenave[1] wrote a paper on a disease which was called by him the *Lupus erythematosus*, and which I found to be that previously described by myself under the name which I have just mentioned.

Since that time I have had repeated opportunities of examining cases of this disease, and have been able to keep several of them under observation during a long period. And I have been induced to adopt M. Cazenave's name for it in preference to that which I had myself originally chosen. For this complaint, in most instances, takes a chronic course, lasting generally for many years, and when it disappears cicatrices are formed. Now, these characters certainly correspond to those of lupus rather than to those of seborrhœa.

Nevertheless, I am able to show that, in this affection, there is really a peculiar degenerative change, not only in the sebum itself, but also in the organs by which it is secreted. Indeed, this is, in some cases, indicated by the fact that the sebaceous glands seated on the reddened and diseased surface are plugged up with masses of secretion resembling that which constitutes comedones, but of an unusually firm consistence.

Dr. I. Neumann also, who has examined the skin of the cheeks of individuals affected with this disease, has pointed out that its seat is in the sebaceous glands.

In the letterpress which accompanies my Atlas[2] I have given the following description of the *lupus erythematosus*. "The first indication of this disease consists in the formation of sharply-defined patches, very little raised above the cutaneous surface, but rough to the touch and of a grayish-red colour. In many cases we afterwards find these spots covered with small hard points of a dark green colour, which consist of sebum plugging up the mouths of the glands. These "comedones" may be either quite separate from one another, or packed side by side, or even fused into a single mass. In other instances, however, there appear on the reddened patches thin white pellicles, which present on their under surface numerous thread-like processes passing into the dilated ducts of the sebaceous glands. These processes, like the pellicles themselves, consist of dried sebum mixed with scales of epidermis.

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[1] 'Annales des Maladies de la Peau, et de la Syphilis,' vol. iii, No. 11, 1851.

[2] 'Erste Lieferung,' 1856, tab. 6 und 8, s. 4.

Of the two plates of this disease which form part of my Atlas I would particularly draw attention to the second (Tab. 8). This shows clearly the greenish-red hue of the skin of the face, covered with numerous dark-coloured comedones. I cannot but believe that those who refer to this drawing will come to the conclusion that the "*lupus erythematosus*" of M. Cazenave is, in reality, due to a special change in the sebaceous glands and the secretion formed by them.

Etiology.—The causes of the affections which I have been describing have not as yet been fully ascertained. I do not, however, wish to imitate the course taken by most dermatologists, who pass over this question entirely; and therefore I will here state all that I have been able to gather from my observation of these complaints.

In the first place, some of them, which affect almost everybody, and do not in any way impair the health, are clearly of a physiological, rather than a pathological, nature. Thus, the *vernix caseosa* of newly-born infants, and the *smegma præputii penis et clitoridis*, are to be regarded as normal products, unless they are formed in excessive quantity; and the seborrhœa neonatorum (Gneis) is likewise scarcely to be looked upon as a pathological condition. If it goes beyond a certain point, however, any one of these may give rise to affections of various kinds, so that there is, in this instance (as in so many others), a close connection between the healthy state and that which we consider to be disease. In other words, only an arbitrary line of separation can be drawn between the physiological and the pathological forms of seborrhœa.

These affections, however, acquire, in certain cases, a peculiar degree of intensity, and are accompanied by certain morbid states of the general health, with which they undeniably stand in a causal relation; for, when these subside, they too disappear. So far, then, as their etiology is concerned, we are fully justified in laying particular stress on those forms of seborrhœa which are demonstrably connected with other diseases.

Now, this is especially the case with that local variety of seborrhœa which occurs on the head and face of young persons and adults, appearing sometimes as a *S. oleosa*, sometimes as a *S. sicca*, and generally attended with a more or less marked *defluvium capillorum.*

These patients, indeed, are for the most part led to consult a medical man, chiefly by the uneasiness which they feel on account of the way the hair is coming off, and of the quantity of *scurf* with which the head is covered. In those cases in which the hair does not fall out to so great an extent the disease is, at first, commonly overlooked. For no subjective symptoms (such as pain or itching) are, as yet, complained of, and the only morbid condition is the presence of pellicles of sebum upon the surface of the face and head.

It is only at a later period, when the affection has existed for some time, that itching of the head occurs, which, together with the *defluvium capillorum,* leads the individual to seek medical advice.

In the majority of these cases the patients are chlorotic girls; and even those males who are affected with this form of seborrhœa are generally in a condition analogous to chlorosis. Other diseases, however, by which the nutrition of the body is impaired, are very frequently followed by the falling off of the hair and the scurfy state of the head, characteristic of the complaint which I am now describing. Thus, we see it after typhus, measles, scarlatina, smallpox, and other febrile diseases; and it may also arise in women recently confined, during the period of lactation, and in persons affected with tuberculosis, syphilis, or a chronic form of cancer.

In some instances, however, it is difficult to show that this affection, and the *defluvium capillorum* which accompanies it, are connected with any local or general disease. For we sometimes find seborrhœa occurring in persons who enjoy good health and are well-nourished; and although, in these cases, the complaint often quickly subsides, yet it is occasionally prolonged. Under these circumstances, we know absolutely nothing of its predisposing or determining causes.

It may, indeed, be noticed that, as a rule, seborrhœa is, in healthy persons, confined to the scalp, and attacks particularly the anterior part of this region, corresponding to the distribution of the frontal nerve. Sometimes, however, the face also is slightly affected, a few minute scales making their appearance at different points on its surface.

The *seborrhœa oleosa* of the face, again, is accompanied, in most instances, by a scaly affection of the scalp. It occurs both in persons who are well-nourished, or even fat, and also in those who are in the habit of drinking spirits to excess, and in whom the liver has undergone fatty degeneration.

This is, indeed, a point to which I would draw the especial attention of those who are interested in the study of pathology and morbid anatomy. For it is an established fact that the sebaceous secretion of spirit drinkers (and, consequently, of persons with fatty livers) is particularly soft and oily. Hence the skin of these individuals has a peculiarly smooth and greasy feel. Hence, also, the ducts of the glands in these people are never obstructed by plugs of sebum (comedones). In fact, unless their position is indicated by the exit of minute hairs at the same points, the apertures of these ducts are distinguishable only by a practised eye and on careful examination.

Treatment.—This may, of course, be either *general* or *local:* on the one hand, internal remedies may be administered; on the other hand, external applications may be employed. In many instances, however, the seborrhœa is not the result of any constitutional malady, or at any rate, is due to causes concerning which we are altogether in the dark. Hence I prescribe internal medicines in those cases only in which local applications have proved unsuccessful, or in which some demonstrable disease of the system may be supposed to give rise to this affection.

Now, experience has shown that those agents which improve the nutrition of the body generally, and favour the process of sanguification, are most effectual in removing seborrhœa.

In suitable cases, therefore, we may first prescribe the common bitter medicines, such as the *Infusum Millefolii*, the *Trifolium Fibrinum*, the *Radix Calami Aromatici*, the *R. Zingiberis*, or the *R. Cardui Benedicti;* subsequently, we may in some cases give quinine, or the *Decoctum Cinchonæ;* and, finally, we may have recourse to arsenic.

Whenever the patient is evidently suffering from anæmia, chlorosis, or any similar condition, our internal treatment should, of course, mainly consist in the administration of preparations of iron. Under these circumstances, I have often used, with advantage, the combination of iron and arsenic proposed by Erasmus Wilson, and which he terms the *Mist. Ferro-arsenicalis.* The formula for it is as follows:

℞ Vini Ferri, ℥iss;
Syr. Simpl.;
Liq. Potassæ Arsenitis, ā ʒij;
Aq. Destill., ℥ij;

a drachm to be taken three times daily with the meal.

Should the Vinum Ferri disagree with the patient, the *Tinctura Ferri Malatis* may be substituted for it. The prescription which I give in such a case is the following:

℞ Tinct. Ferri Malatis, ℥j;
Liq. Potassæ Arsenitis, ʒj;
Aq. Menthæ, ℥iv;

"a tenth part to be taken every day before dinner."

It must be borne in mind that the full effect of any of these medicines can be obtained only by continuing their use for several months at least, and in gradually increasing doses.

I must express my conviction that, in these cases, it is quite useless to adopt an eliminant method of treatment, or to prescribe any of those medicines which are supposed to act as "purifiers of the blood." Purgatives and the Decoct. Sarzæ Comp. are alike inert in seborrhœa; indeed, they may even be injurious.

Accordingly, the diet of these patients should be nutritious in proportion to their digestive powers, and their mode of life, in other respects, should also be regulated.

The local treatment of seborrhœa must vary with the seat of the disease. In any case, however, the first point is to get rid of any masses of sebaceous secretion which may be present. For this purpose we must make use of agents which soften or dissolve this substance. Simple ablutions with water, or the application of the douche, will effect its removal only after a considerable time, whereas this may be done very much more quickly by rubbing into the part some fatty or oily substance, or even alcohol or ether.

It is, however, necessary to remember that, when this complaint has lasted a long time, and crusts of some thickness have been formed, they must be slowly and gradually removed; otherwise the patient is very likely to suppose that the sudden separation of these accumulations of sebum is the cause of the loss of his hair. For it almost always happens that the same condition which gives rise to the seborrhœa causes the hairs which grow on the part to be ill-nourished. Hence, even when they do not all fall out they often become so loose that they may be drawn from their sacs by a very slight amount of force; or, indeed, they may actually become detached and yet be kept in their places by the masses of sebum, so that the scalp appears still to be well covered.

Now, if, under such circumstances, we suddenly remove the crusts in which the shafts of the hairs are imbedded, these will, of course, come away at the same time, and unless we are prepared for this result we shall be mortified and our patient disgusted at finding that he has all at once become bald.

It is, then, advisable, in these cases, either to avoid getting rid too hastily of these masses of sebum, or, at any rate, to tell the patient beforehand what will be the effect of our treatment. This may, for instance, be done by first pulling out a few of the hairs, and showing to him that their roots are no longer imbedded in the skin, being kept in place merely by their attachment to the crusts, with which, therefore, they must necessarily fall off.

Having, then, with due caution, softened and removed the masses of sebum, we must thoroughly wash the part affected with soap and water. This is to be done several times in all cases, even though the skin may become red and shining, and though, at one or two points, a little oozing (Nässen) from its surface may take place.

The integument having been thus cleansed, some ointment or fatty substance should be again applied, both for the purpose of relieving the very unpleasant feeling of tension left by the operation of washing, and also to prevent fresh scales being formed, which would otherwise quickly occur.

I do not think that, under these circumstances, it makes any difference whether we employ simple lard, or an ointment containing a small quantity of oxide of zinc, white precipitate, tannin, or quinine. In any case the good effects ought probably to be ascribed to the lard alone. If, however, the patient complains of itching after the scales have been removed, it will very likely be useful to apply, with a brush, a mixture containing the Ol. cadinum and alcohol in equal parts, or to wash the surface of the skin with a weak solution of carbolic acid. For this purpose I make use of the following formula:—

℞ Acid. Carbolic., gr. x;
Glycerrhinæ;
Alcohol., Aq. Destill. seu Aq. Lavandulæ, ā ℥ss.

The whole process I have been describing (including the inunction of oil, washing the part with soap and water, and, finally, the application of lard or of some ointment) must be repeated every twenty-four hours until the itching ceases and fresh scales are no longer formed. By this time the hair will have begun to re-appear or will have acquired a more vigorous growth.

When seborrhœa affects, not the scalp, but the face or some part of the trunk, it yields much more readily to the treatment I have been describing. In such cases it is seldom necessary to employ any of the preparations of tar.

Prognosis.—In the different varieties of seborrhœa the prognosis depends mainly on the *cause* of the disease. Those forms of it which may be regarded as physiological are of less consequence than any others, while the most unfavorable of all are those associated with cancer, tuberculosis, syphilis, or some other internal malady. The liability to relapses follows the same rule.

As for the baldness to which these affections give rise, it is seldom merely transient; that is to say, the growth of the hairs is rarely afterwards restored to its normal condition. Those subsequently developed are generally shorter, thinner, and less richly supplied with pigment than before. Even though their number may not be diminished, these hairs form merely a scanty, thin, colourless down, which is a very poor covering to the head of the patient.

2. *Affections in which the sebum is secreted in excessive quantity; its excretion being, at the same time, interfered with.*

Excepting the lupus erythematosus, the diseases hitherto described in this chapter are all attended with a great increase in the production of sebum, which at once reaches the cutaneous surface, there being no obstacle to its excretion. But even in these diseases we generally find some of the ducts plugged up by masses of sebaceous secretion which have long borne the name of *comedones* (acne punctata).

Now, although, so far as we know, comedones arise only when the escape of the sebum, after its secretion, is in some way prevented, yet the fact that seborrhœa (especially the form of it which affects the face) is commonly associated with their presence appears to show that the same condition which produces the one also causes the development of the other affection.

It is, however, necessary, for many reasons, that I should give a special account of comedones. Thus, the appearances to which this affection gives rise are entirely different from those of seborrhœa. Indeed, by the extreme enlargement of comedones, or by the coalescence of several of them into a single mass, certain peculiar wart-like bodies are formed, which were described by myself, in 1842, under the name of sebaceous warts (Sebumwarzen), and have been termed, by Ribbentrop,[1] Comedonenscheiben. Moreover, the presence of comedones often sets up an inflammation of the follicles, which would naturally be termed a *folliculitis*, but has been generally called *acne* (Ionthus, Varus).

Again, there are, besides these, several other diseases of a similar origin. Such is that which is known as ***Milium*** or ***Grutum***, or, according to Willan, as *Strophulus albidus*, and *S. candidus;* that which has been termed *Vitiligoidea;* and, lastly, that which received from Willan the odd appellation of ***Molluscum contagiosum***, and which consists in the formation of semiglobular elevations resembling vesicles. All these morbid conditions can be shown to belong to an uninterrupted series, and to be seated in the sebaceous glands, of which, sometimes, one alone is affected, whereas in others among these diseases several adjacent glands are simultaneously involved.

Comedones.

These, as we all know, are small dark points, seldom raised above the level of the skin, and easily squeezed from their bed by pressure applied on each side of them. The black spots are then seen to form the summit of worm-like bodies, which were, indeed, formerly supposed to be minute worms, and are generally of some length, and of a whitish, whitish-yellow, or yellow colour. This affection is observed chiefly on the face, chest, and back.

These masses may be easily examined after their removal from either the living or the dead body; they are then found to consist of sebum, which has accumulated and been retained within the canals common to the sebaceous glands and the hair-sacs.

Comedones are sometimes solitary, sometimes collected together in groups. They vary in size between that of a pin's point and that of its head. The colour of their free extremity is not always the same.

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[1] Rust's 'Magazin,' Band lxiv, 1845, Heft i.

If we watch a comedo, at intervals, for a considerable time, we often find that it remains altogether unaltered. The affection then causes great disfigurement, for the face of the patient looks as if grains of gunpowder had been introduced into the substance of the skin. Other comedones, however, undergo spontaneous involution; the sebum which had accumulated is gradually extruded from the mouth of the duct, and the gland is restored to its normal condition. In this case, the affection does not return, unless, indeed, the excretory canal should again become obstructed. It has, then, been ascertained, by direct observation, that it is possible for comedones to disappear of themselves, and that when this occurs no further morbid changes are observed.

This important fact is, indeed, my justification for describing *acne*, and the affection now under consideration, apart from one another. For although I admit that *comedones* may be the cause of *acne*, by irritating the surrounding parts or in other ways, yet it appears to me that there is so great a difference between the two diseases as to render it advisable that they should be treated of separately. I must, therefore, refer the reader to the second volume of this book for an account of acne.

The investigations of Krause, Simon, von Bärensprung, Er. Wilson, and Kölliker have shown that comedones are caused by an accumulation of the sebaceous secretion, not only in the glands themselves, but also in the canals common to them and the hair-sacs. These masses generally contain, besides the sebum, minute hairs in greater or less numbers, some of which are rolled up spirally.

Lastly, the *Acarus folliculorum* is very often, although not constantly, present in comedones. This parasite was first detected by Henle[1] in the ceruminous glands; a little later it was discovered independently by Gustav Simon[2] in dilated hair-sacs and sebaceous glands, and subsequently the same observer found it in these glands while in the normal state. Its existence is, at the present time, generally recognised; and with a little dexterity it may be very easily brought into view.

For this purpose it is no longer necessary to examine comedones themselves. We now simply scrape with the edge of a knife the forehead, or some other part of the skin of a person affected with this parasite. In this way we collect a quantity of sebum mixed with masses of epidermis; and when this material has been softened by the addition of a little oil, the animal may be sought for in it with success. It may be very well seen with a magnifying power of 400 diameters.

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[1] 'Beobachtungen aus der Oestlichen Schweiz,' Dec., 1841.

[2] 'Med. Zeitung von dem Verein für Preussen,' 1842, No. 9. Müller's 'Archiv für Anatomie,' 1842.

The *Acarus folliculorum* appears to vary greatly in length and form, according to the stage of development at which it is examined.

The following account of this parasite is given by Simon:—"In the form most frequently observed the *Acarus folliculorum* is from 0·085‴ to 0·125‴ in length, and about 0·020‴ broad. The head is provided with two lateral two-pointed palpi, and a long tubular proboscis, upon which is a triangular organ, made up of two fine points or bristles. The head passes immediately into the thorax, which makes up about a fourth of the whole length of the animal. On each side of the thorax there are four very short, conical feet, consisting of three segments, and bearing three narrow claws at their free extremities. From the base of each foot a ridge (Streifen) extends transversely across the thorax; and these transverse bands are all connected together by a longitudinal ridge placed in the median line.

"The abdomen is about three times as long as the chest; its integument presents a number of constrictions, which are seen as transverse lines placed close to one another, and give a notched appearance (like that of a file) to its lateral edges.

"Another form of this animal is characterised by the shortness of the abdomen, which may not be longer than the thorax, and is, at any rate, not more than half as long again as that region.

"A third variety of the *Acarus folliculorum* offers the peculiarity that it has only three pairs of feet instead of the four which are usually present. The abdomen, too, is perfectly smooth, the transverse lines being altogether wanting. Erichsen supposes this form of the animal to be the youngest, that first described to be the next in order, and the other (with the short abdomen) to be in a still later stage of development." Indeed, this observer believes that, in the fully formed acarus, the abdomen is entirely obsolete.

There is also a fourth variety of this parasite, which has a cordate form. This was first recognised by Simon, who gave a drawing of it.

Wedl states that he has very frequently observed it, and supposes it to constitute the earliest stage in the development of the acarus. His main reason for this opinion is that he has several times quite plainly seen such a cordate body within the anterior part of the abdomen of another animal.

Various names have been given to this parasite by different writers. Simon named it the *Acarus folliculorum*; Owen, the *Demodex follicularis*; Miescher, the *Macrogaster Platypus*; P. Gervais, the *Simonea folliculorum*; E. Wilson, the *Entozoon folliculare* and the *Steatozoon folliculare*. According to Th. von Siebold it belongs to the *Acarina*.

Gruby asserts that, having transferred this parasite to a dog, he afterwards found the animal to be affected with other acari belonging to the very same species; and that in the course of two years these increased enormously in numbers, so that every one of the cutaneous glands became affected by them, and the dog, in consequence, lost its hair. Simon and Wedl, however, have cast doubts upon these statements. Oschatz maintains that he has found a similar parasite in the glands of the eyelids of a sheep.

Although the *Acarus folliculorum*, even when it is present in enormous numbers, generally produces no obvious symptoms, Simon, nevertheless, admits the possibility that it may in some cases lead to the formation of comedones and acne-pustules. Indeed, Remak has recorded the case of a person severely affected with acne of the nose and chin, of which complaint this parasite was supposed to be the cause. But in this instance it was only after searching for a long time and with great trouble that Remak succeeded in extracting the animal from the bottom of a few of the pustules, sometimes at the depth of a line from the surface of the skin.

In my opinion there is no ground for the belief that the *Acarus folliculorum* ever gives rise to either of the affections which I have named. Indeed, we actually fail to find it in comedones and within the tubercles of acne more often than in the sebaceous glands of individuals whose skin is particularly smooth and delicate. For in such persons this parasite may frequently be discovered by the method above described.

Milium seu Grutum.

Having now given a full account of the ordinary comedo, I naturally pass on to describe the affection which is known as *milium* or *grutum*, and consists in the formation of little, round, white bodies, sometimes isolated, sometimes aggregated together. These bodies lie beneath the epidermis, and when this is divided, they may be easily removed by applying pressure on each side of them.

This affection is observed most commonly on the surface of the eyelids and cheeks, on the red part of the lips, and on the male and female genital organs. Round the *corona glandis* the little round bodies which I have been describing may often be seen crowded together in enormous numbers; and they are also found on the *dorsum penis*, the prepuce, and the scrotum, where they frequently lie close to the spots at which hairs emerge from the skin. The parts of the female external organs most frequently affected in this way are the nymphæ, the internal surfaces of which, for instance, often contain hundreds of them, and present, in consequence, a coarsely glandular aspect.

The following are the chief points of distinction between the *comedo* and the *milium*. The former occupies the canal of a hair-sac, and is therefore in direct communication with the cutaneous surface. Indeed, it owes to this circumstance its black "head," which simply consists of particles of dirt, adhering to the fatty substance of which the comedo is made up. On the other hand, no dust or dirt has access to the milium, for this little round body lies beneath the cuticle, which forms a continuous covering over it. Moreover, the seat of this affection is not the duct, but the sebaceous gland itself, or, more probably, a single lobule of this organ.

I believe, then, that the *milium* consists of a sebaceous gland (or only a lobule of such a gland), filled with its secretion, and no longer connected with the hair-sac, into which it previously opened, but forming an independent body imbedded in the substance of the skin. I may surely urge in favour of this view the fact that these little round bodies are frequently found where operations have been performed. Thus, they may often be observed on either side of a linear cicatrix, this being probably due to the fact that several lobules of sebaceous glands, cut across when the incision was made, have remained isolated, and have subsequently become distended with sebum.

These globular bodies may also frequently be noticed to be present, in large numbers, on regions affected with some other cutaneous disease, such as lupus. In this case, too, it is probable that they arise in a similar way, for, in the course of the formative and destructive changes which constitute lupus, certain sebaceous glands are very likely to have become separated from the hair-sac, or some of the lobules of such glands, from the rest of them.

But whatever may be the nature of the change which leads to the production of *milium*, it is at any rate certain that these little round white bodies lie merely beneath the cuticle, and are not attached to any of the deeper structures; being fixed only by the lamina of epidermis which covers them. This is easily shown by the fact that they escape at once, as soon as an incision is made into the epidermis which confines them. Indeed, they are sometimes cast off spontaneously, when their cuticular covering is removed in the course of the physiological changes which it undergoes; and thus whole groups of these little bodies may be got rid of at the same time.

Vitiligoidea.

This is another affection which arises from a morbid change in the sebaceous glands. It received the name of Vitiligoidea from the late Dr. Addison[1] and Dr. Gull, who described two varieties of it, the *V. plana* and the *V. tuberosa*.

Mr. Erasmus Wilson, being dissatisfied with the name given to this disease by the writers whom I have quoted, has proposed for it the title of *Laminæ flavæ epithelii cutis*. He is of opinion that, in this complaint, it is the layer of epidermis lining the follicles which is affected, rather than the glands themselves and their contents. He thinks that the nodules formed in *Vitiligoidea* arise from a yellow hypertrophy of the epithelium which lines the sebaceous glands. This, indeed, was not the opinion originally held by Mr. Wilson. He at first regarded this affection as due to a morbid change in the glands themselves, and gave to it the name of

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[1] 'Guy's Hospital Reports,' 2nd series, vol. vii, p. 2, vol. viii, p. 149.

Molluscum sebaceum. But he was subsequently led to adopt a different view by finding that, having punctured one of the nodules, he was unable to squeeze out the yellow body which lay beneath the epidermis.

Now I cannot but think that, if Mr. Wilson had made an incision through the tubercle instead of simply pricking the cuticle over it, he would have adhered to his first opinion. For, in the cases which have come under my observation, on cutting across the epidermic covering and applying pressure to the sides of the incision, a substance has at once escaped which, when examined, has been found to differ from the ordinary sebaceous secretion only in being of a firmer consistence, and, indeed, in having a more marked yellow colour.

I must also point out that this affection may be detected in many persons on the upper and lower eyelids, and even on some other parts of the face. Its presence is discovered by stretching the skin forcibly, and making a tolerably deep incision into the whitish or yellowish patches, which then come into view. On applying pressure to the sides of the wound, there escape masses of degenerated sebum which had accumulated within the cutis.

According to the description given of it by Addison and Gull, this disease "presents itself under two forms, namely, either as tubercles, varying from the size of a pin's head to that of a large pea, isolated or confluent; or, secondly, as yellowish patches of irregular outline, slightly elevated, and with but little hardness. Either of these forms may occur separately, or the two may be combined in the same individual. Under the latter circumstances, we are able to trace the connection of the two through an intermediate series of gradations, which clearly demonstrate their essential relations."

Up to the time of the publication of these papers in the 'Guy's Hospital Reports,' five cases of Vitiligoidea had come under the notice of the physicians whose observations I have been quoting. Four of these cases occurred in women, while the remaining patient was a man. The affection was seated on the face (including the eyelids and ears), as well as on other parts of the body, such as the elbows and both the dorsal and palmar surfaces of the hands. In every instance the tubercles developed themselves very slowly, and at length passed into a stationary condition, after which they underwent no further changes.

I must not omit to state that in three of these five cases of

Vitiligoidea, the skin-affection was preceded by jaundice; and that, in another of them, diabetes was present. In the remaining case, no mention is made of the coexistence of any other malady.

From the account of this complaint given by Addison and Gull, and also from the plates which accompany their papers, it is easy to perceive that the cutis itself could not have been the only structure affected in the cases which came under their observation. In fact, I am convinced that Vitiligoidea consists in a peculiar degeneration of the sebum, and the glands which secrete this substance; and that this disease is allied to other cutaneous affections which have long been well known, and particularly to that form of milium which I have already mentioned as occurring on the red part of the lips, on the nymphæ, and round the corona of the glans penis.

It is true that the second and the fourth of the cases recorded by these writers presented a feature which is opposed to the opinion I have advanced. In these instances the affection occurred on the palms of the hands, where no sebaceous glands have as yet been discovered in the skin. However, on the dorsal surfaces of the fingers, and particularly over the joints between the first and second phalanges of one hand, the appearance of the tubercles is exactly the same as on the other parts of the body.

The drawings given by Mr. Wilson[1] likewise show plainly that the seat of this disease must be looked for in the sebaceous glands. For, in these figures, also, we observe tubercles, some of which are isolated and some confluent, but which all correspond to distended glands, and resemble the elevations which constitute milium.

As I have already stated, in each of the two cases of Vitiligoidea which have come under my observation I succeeded in squeezing out the morbid material from the cavities in which it lay, by applying pressure, after having made an incision through the cuticle. The fatty substance which I thus obtained was of firm consistence, and of a yellow or at any rate a yellowish colour, and resembled the sebaceous secretion.[2]

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[1] Op. cit., 1863, plate xvi.

[2] It is stated by Drs. Addison and Gull (op. cit., vol. vii, p. 268), that, in the case of John Sheriff, "many of the nodules were not unlike the ordinary molluscum, but, when incised with a lancet, they were found to consist of firm tissue, which, on pressure, gave out no fluid save blood."

There is, at the present time (June, 1866), in Guy's Hospital, a woman, æt. 39, affected with this remarkable disease. She is a patient of Dr. Pavy;

Sebaceous Warts and Tumours.

Appearances of a very different kind from those which I have been hitherto describing are produced when comedones form in follicles placed close to one another. Under these circumstances, if the excretory canals are closed, and the secretion of sebum goes on, the glands keep increasing in size till at length they come into contact, and coalesce into a single mass, which may be regarded as being, in fact, a gigantic *comedo*. These bodies bear a great resemblance to the common warts, arising from the hypertrophy of papillæ, and the more so because they in time acquire a darker colour, and become gradually harder than they were when first formed.

I must also mention another peculiar form of this affection, likewise due to an accumulation of sebum in a gland (or in several

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she has been the subject of jaundice for three years; and her liver is much enlarged. In this woman, the palms of the hands are involved in the complaint, and it also extends to the under part of the heel, and occupies the plantar surfaces of the toes. At all these points, unprovided with sebaceous glands, the disease takes the form of the *V. plana;* while, on the dorsal aspects of the fingers, on the skin of the pinna of the ear, and at other parts of the body, it appears as the *V. tuberosa.* Round the eyelids, however, where the skin of course contains sebaceous glands, there are patches of the *V. plana.*

It, therefore, appears evident that the complaint cannot universally consist in an alteration of the sebaceous glands. It might, however, be that the raised growths on the fingers and elsewhere arise, in part, from an accumulation of sebum. The microscopical examination of one of these masses removed from the living patient did not lead to the conclusion that this was the case. On cutting across the growth, it was found impossible to squeeze out any of the yellow masses which came into view. These were nearly as hard as cartilage, and contained a good deal of fibrous tissue and a large quantity of granular matter, very similar to that found in the atheroma of arteries (as was suggested by Dr. Moxon). No cells were found in these growths, and the most careful examination failed to show that the sebaceous glands were in any way concerned in the production of the disease.

A full account of this case will be found in the 'Guy's Hospital Reports,' 1866, ser. iii, vol. xii.

It may be worth while to mention that, since the publication of the paper by Addison and Gull, another case besides this has occurred at Guy's Hospital. In this patient, also, the Vitiligoidea was associated with jaundice.—[Ed.]

glands which have coalesced), but differing from that just described, in the fact that it does not resemble a wart, because the comedones of which it consists do not all project freely upon the surface of the cuticle. In the complaint to which I now refer the comedo which occupies the middle of the mass is alone visible externally; the others being covered with epidermis, and merely forming elevations above the level of the skin. This affection resembles, to some extent, a smallpox pustule. It has in its centre a small depression, which may be compared to an umbilicus, and may be observed to contain a minute plug of sebum, either of a white or dark colour. This little pit is surrounded by a raised border covered with healthy cuticle. If pressure be applied to the sides of one of these small tumours the central comedo protrudes, and the whole mass is emptied of its contents.

As long ago as 1842-44 I alluded to this affection, both in my lectures and in my annual reports on dermatology; and at that time I drew attention to the fact that it is observed especially in persons who suffer from prurigo. Subsequently Dr. Ribbentrop,[1] of Berlin, described the same disease under the name of *Comedonenscheiben*, and explained the various forms which it presents by attributing them to differences in the composition of the sebum, this being sometimes hard, and containing a large quantity of stearine and calcareous salts, while in other instances it has less of these constituents, and is, therefore, softer.

Molluscum contagiosum.

This is a cutaneous disease, which depends upon conditions of the same kind as those to which the affections just described owe their origin.

" This singular eruption," says Bateman,[2] " had not been noticed by Dr. Willan, and was unknown to myself till after the publication of two editions of my Synopsis."

The term *Molluscum* had, indeed, been previously applied by Willan to an affection attended with the formation of solid tubercles, which are moveable, possess but slight sensibility, and have an elastic feel; but in the *Molluscum contagiosum* of Bateman the tubercles contain a milky fluid, which, on the application of slight pressure to the side of the mass, is easily made to escape through an aperture, previously almost imperceptible, in its summit.

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[1] 'Entwickelungsgeschichte der Comedonen und Atherome;' 'Rust's Magazin,' B. lxiv, 1845.

[2] 'Delineations of Cutaneous Diseases,' &c., 1817.

Now, it is quite true that tumours of the same colour as the rest of the skin, sometimes stalked, sometimes sessile, varying in size from that of a pea to that of a child's head, are not unfrequently formed on the cutaneous surface; and that the interior of these tumours is in some cases solid, and made up of areolar tissue, while in other instances it consists of sebum, which, especially if it is fluid, may easily be squeezed out upon the surface of the skin through a still pervious follicular aperture.

If this affection is to be termed *Molluscum*, we may distinguish the two varieties of it by naming the one *Molluscum fibrosum*, or (as Virchow[1] has it) *Fibroma molluscum*, and the other *Molluscum sebaceum* s. *contagiosum*.[2]

We are, however, at present concerned only with the latter of these two forms. For the cutaneous diseases to which the names *Molluscum non-contagiosum*, *M. pendulum*, were formerly given, come under a different head in my system of classification; and the same may be said of the affection termed mycosis by Alibert, and also of the case handed down from the last century by Tilesius and Ludwig.[3]

It is probable that the term molluscum had before been commonly employed to designate tumours raised above the surface of the skin, and of a wart-like appearance. For Plenck[4] gave to one of his species of warts the name of *Verruca carnea*, s. *mollusca*, and describes this affection in the following terms:—"Est tuberculum molle, sensile, cuti concolor, vel rubens, sæpe pilosum; in naso et facie ut plurimum invenitur. Videtur admodum magna cutanea glandula quasi esse."

No one, however, has done so much to make the *Molluscum contagiosum* generally known to the profession as Bateman, who first gave this name to the disease, and described and figured it in his continuation of the work of Willan.

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[1] 'Die krankhaften Geschwülste,' 13te Vorlesung, p. 327; Berlin, 1863.

[2] Ibid., 11te Vorlesung, p. 222.

[3] 'Hist. Pathologica singularis cutis turpitudinis J. G. Rheinhardi, gezeichnet und mitgetheilt von Tilesius, mit einer Vorrede, von Prof. C. F. Ludwig'; Leipzig, 1793.

[4] 'Doctr. de morbis cutaneis,' ed. 2da. aucta, Viennæ, 1783, p. 97.

According to the definition given by this observer this disease differs from the other species of molluscum chiefly in being communicable to other persons, the milky fluid contained in the larger tubercles being the medium by which the contagion is conveyed.

Later writers, however, seem not to be agreed as to the contagious nature of this affection, the difference in their views probably arising from the fact that they have not all had equally good opportunities of observing cases of molluscum.

Carswell and Thompson, for instance, relate that a boy affected with this disease communicated it to a schoolfellow, by whom it was again transferred to his brother, a child at the breast, and so to his mother. These observers, however, give no details which might enable us to determine whether the complaint in these cases was really that described by Bateman or one of a different nature.

Alibert collects together various cutaneous affections, some syphilitic, some not so, but all attended with the formation of fungous growths, and jumbles them pêle-mêle together into one genus, to which he gives the name of *Mycosis*. He refers to the case of Carswell, as being an instance of his *Mycosis fungoides*.

The later French writers seem likewise to be imperfectly acquainted with the disease with which we are now concerned. Thus, Biett says that the *Molluscum contagiosum* is a very rare affection which had not, up to the time when he wrote, been observed in France. Again, Cazenave and Schedel, Gibert, and Duchesne-Duparc make only cursory allusions to it, and no one of these dermatologists gives any detailed account of it.

To this rule Rayer is, indeed, an honorable exception; for this writer not only describes in regular order all the various affections produced by retention of the sebum and dilatation of the sebaceous glands, but also displays an accurate acquaintance with the *Molluscum contagiosum* of Bateman.

A few German writers (namely Frank, Riecke, Fuchs, Simon, and von Bärensprung) mention this affection when describing warts, comedones, or encysted tumours. They give, however, but an imperfect account of it, and therefore we must conclude that but few cases of it had come under their observation.

In the year 1845 I had, with Rokitansky and Engel, an opportunity of examining a small number of patients affected with *Mollus-*

cum contagiosum. I shall subsequently state the conclusions at which I arrived concerning this disease.

The monograph on the subject of molluscum, by Dr. Jakobowich (Jacobovics) of Vienna, although published in the French language, is of German origin, and may be said to belong to German literature. But of the plates appended to this treatise some represent milium and comedones, others teleangiectases, and others even belong to macular affections. Indeed, the only case of molluscum contained in this work is that of Tilesius, which is an instance of *M. non-contagiosum*, and which Jakobowich describes in a style more suited for lay than for medical readers.

This treatise then, which is quoted in almost every work on dermatology, is far from possessing the scientific value which would entitle it to such general notice. Dr. Jakobowich, indeed, never devoted himself to this special branch of medical practice; and his object in publishing a book on molluscum was to make more generally known in Germany an affection which had, up to that time, attracted but little attention in that country.

The works of English writers make up the greater part of the literature of molluscum. Plumbe, indeed, does not mention it; but Jon. Green, A. T. Thomson, Er. Wilson, Jones, Patterson, Henderson, Carswell, Tilbury Fox, and Hillier, may be named as having given a full account of it in works written by them, or as having published in the medical journals cases of this disease, with the results of their investigations upon it. Among the authors I have named there is a general agreement as to most of the characters of this complaint, and particularly with reference to its form and seat. But in one point they differ, for some of them believe that it is, and others that it is not, contagious. Of these opinions the latter is the one which I myself hold.[1]

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[1] In Plate IX of the 'Atlas of Portraits of Skin Diseases,' published by the New Sydenham Society, a figure is given of the face of a child affected with this disease, and the same plate also contains a drawing of the breast of this child's mother, who was still suckling. On the woman's breast are several little tumours, precisely similar to those on the infant's face. This instance of the apparent transmission of the complaint from one person to another was under the observation of Mr. J. Hutchinson, who tells me that he has several times seen the same thing. I believe that in most, if not in all cases, in which the communication of this disease has been supposed to occur, the individual first affected has been a child; and most English observers certainly do not regard as contagious the form of molluscum in which numerous pendulous

Having now referred fully to the literature of this subject, I may pass on to define the term *Molluscum contagiosum*. This expression is synonymous with the "*tumeurs folliculeuses*" of Rayer.[1] It is, at the present day, applied to an affection which consists in the formation of tumours, varying in size from that of a lentil to that of a man's fist, either stalked or sessile, of the colour of healthy skin or slightly tinged by pigment deposit. These tumours contain in their interior a white material, which may be either hard or soft, or may even form a milky fluid, but which, whatever its appearance, can always be recognised as consisting essentially of sebaceous secretion. By pressing the sides of these tumours their contents may generally be squeezed out.

This affection is, in most cases, very slowly developed, and sometimes makes its appearance on parts at which a comedo (or an obstructed sebaceous gland) had previously been observed. It gives rise neither to pain nor to itching.

In some instances these tumours resemble, at their commencement, the sebaceous warts (Comedonenscheiben) of which I have already spoken, but at other times they at first look like vesicles. In the majority of cases they are not bigger than peas, and it is quite exceptional for one of them to grow as large as a man's fist. The greater their size the more commonly are they pedunculated, whereas the smaller tumours are invariably sessile.

When one of them is emptied of its contents, whether by accident or design, the dilated gland sometimes at once shrinks to its original size, and the affection may then be said to be cured, without the cyst-wall itself having been removed. But in other cases we find that, after the discharge of the contained material, a red inflammatory areola is formed round the cyst, which also becomes more or

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or sessile tumours appear on the surface of the body in persons of advanced age. It is, therefore, important to notice that Prof. Zeissl (who wrote the chapter on 'Diseases of the Glandular Organs,' in the German edition of Prof. Hebra's work) mentions incidentally that he has never seen this disease in children. Zeissl also denies the contagiousness of molluscum, and states that "he himself, Prof. Hebra, and several of his assistants, have repeatedly rubbed the contents of several mollusca into the skin at various points without any effect." If, however, the "mollusca," in these cases, were merely the sessile or pedunculated tumours of adults, the failure of these experiments can hardly be considered to settle the question at issue.—[Ed.]

[1] 'Traité théorique et pratique des Maladies de la peau,' Paris, 1835, tom. iii, page 716.

less painful. A reactive inflammation is, in fact, set up, resembling that which is apt to arise round a comedo. The smaller, as well as the larger, of these tumours are liable to be affected in this way, and, as a consequence of this inflammatory action, their whole substance may break down and be eliminated.

Even when these tumours are very numerous their presence does not in any way affect the health of the patient. Moreover, they have no tendency to ulcerate or undergo induration. This affection may therefore be said to be, *sensu strictissimo,* a cutaneous disease.

With reference to the *cause* of molluscum no satisfactory explanation has been given, either by the older dermatologists or by those of the present day. For I cannot regard as satisfactory the explanation of Hartmann, that it arises from a *nisus excrescendi,* nor the statements of Rayer and others that it is hereditary, or produced by continued pressure and "other conditions." In the cases which have come under my observation it could not be shown that either of the circumstances mentioned by Rayer had anything to do with the production of the tumours. Hence I prefer, for my own part, to confess my ignorance as to the mode of origin of molluscum, or, indeed, of milium, grutum, or sebaceous warts.

Perhaps, however, I ought to mention as a *predisposing* cause of molluscum the presence of other cutaneous diseases, and particularly of *prurigo.* In persons suffering from this last-mentioned complaint, I have several times seen between the pruriginous papules tubercles filled with sebum, some of which were small, but others about as large as lentils.

Any one who may happen to have under his care a patient affected with a large number of these little tumours will very soon convince himself that the simplest method of treatment is at the same time the best. Thus, I have found it easy to remove them with scissors, by the knife, or by ligature; or to destroy them by the application of strong acids or caustic alkalies. But no mode of cure is so successful, nor is any so quick, as the simple evacuation of their contents by applying pressure with the fingers to the sides of these tumours. Whether the contained matter be fluid or solid, I have always found that as soon as it has been completely squeezed out a rather free and continued hæmorrhage has occurred, which, however, has been easily checked by the simple application of charpie. Very soon afterwards, within a few days at furthest, the empty cyst has been withdrawn into the substance of the skin; and the patient has generally been cured of his disease without any suppuration having occurred, a slight flat cicatrix being left when the crusts, formed of dried blood, have become detached.

It is only when the tumours are of considerable size that it may, perhaps, be necessary to remove them, or to make an incision into them, and so evacuate their contents. For those which are smaller, the procedure which I have described will always be found sufficient.

This complaint is less liable to return at spots previously affected by it, than on parts which may have hitherto remained free from these tumours.

II. *Affections in which the sebaceous secretion is diminished in quantity.*

This condition may be recognised by its causing the skin, from being insufficiently lubricated, to become dry, brittle, harsh, and liable to chap. In some cases, moreover, the cutaneous surface is covered with minute, white, branny scales, forming, in fact, the affection which is known as pityriasis.

The decrease in the formation of sebum may be either local or general.

As a local affection, it occurs chiefly in the hands, and is generally the result of the operation of some agent which removes from the epidermis the material by which it is naturally lubricated. Hence its different layers, being deprived of the substance which should connect them together, are shed prematurely. In these cases, too, the absence of fat renders the skin brittle, so that it cannot yield when stretched by the muscular movements, and therefore becomes chapped, and presents fissures (Rhagades). The extensor surfaces of the fingers are especially liable to be affected in this way.

This condition is often observed in maid-servants, washerwomen, and soap-boilers. Willan termed it incorrectly the "*washerwoman's psoriasis*" (Ps. lotricum). It would be better to speak of it simply as a *harshness of the cuticle*, or to call it *asperitudo epidermidis;* or, if it be desired to employ a title which is not new, we may give it the name of *Pityriasis simplex localis*.

A general deficiency in the secretion of sebum occurs in *marasmus senilis*, and as an accompaniment of certain cutaneous diseases affecting the deeper structures of the skin. Thus it is met with in *prurigo, ichthyosis,* and *lichen ruber.*

Prognosis.—When resulting from the presence of one of the complaints just mentioned, this condition admits of no hope of a complete cure. On the other hand, the form of it produced by the action of alkaline substances may be got rid of by removing its cause; whereas, if the operation of these agents is allowed to continue, an eczema often appears at the spots on which the epidermis is roughened. I may further remark that this condition is extremely annoying to the patient, although it cannot be said to be an affection of a very serious kind.

Diagnosis.—The brittleness and desquamation of the cuticle (*Pityriasis simplex*), which result from the defective lubrication of the skin in these cases, might be mistaken for the effects of a chronic eczema in process of cure, in the stage which has received the name of *Pityriasis rubra;* but, in that condition, the spots at which desquamation is going on are more or less thickened and reddened by the previous inflammatory action. Moreover, vesicles either still perfect or dried up are generally to be detected at some point or other within the area of the part of the skin affected by the disease.

Treatment.—In the variety of this condition due to old age, or to the presence of some other cutaneous disease, all that can be done is to bring about, by artificial means, a more complete lubrication of the skin. Now, we are not acquainted with any remedies which act as stimulants to the sebaceous secretion in the same way as diaphoretics to the perspiration. Indeed, the defective formation of sebum, or its total suppression, appears to arise in these cases from the glands having undergone destruction. Hence the treatment of these conditions can consist only in the application of bland, oily substances, of animal or vegetable origin, to the parts affected, or even to the whole cutaneous surface. For this purpose, the *Ol. morrhuæ* is particularly adapted; but if its disagreeable smell forms an objection to its use, fresh lard, butter, almond oil, or cocoa-nut oil may be employed in its place. All fatty substances, however, when exposed to the air for some time upon the surface of the body, become oxidised and fetid, and then exert an irritant action upon the skin. Hence, if the spots affected are of limited extent, they must be washed every day with tepid water before the oil is applied, and when the whole surface of the skin requires lubrication, the patient ought to take a warm bath at least every second day.

When this condition results from the action of alkaline substances, cold lotions must be at first employed, if the part is much congested, and the epidermis partially destroyed. Subsequently, however, when the redness has disappeared and desquamation has commenced, we may, even in these cases, use oily applications.

CHAPTER VII.

CLASS IV.—EXUDATIONES CUTANEÆ.

Diseases of the Skin caused by Exudative Processes.

Although in individual cases it may be difficult, or even impossible, to draw the line where the appearances due to exudative processes affecting the skin begin, and where those of hyperæmia end, yet we can point out, approximatively and in a general way, those characters which indicate the presence of inflammatory products in the cutaneous tissues. Thus, there can be no doubt as to the nature of any case in which vesicles, bullæ, or pustules, are present, produced by the accumulation of serous or purulent fluid beneath the epidermis. Again, any considerable thickening of the substance of the skin, capable of being seen and measured—a swelling of its structure, in fact—such as is observed in erysipelas, œdema, and furunculosis, furnishes a proof that the cutaneous tissue is infiltrated with matters poured out from the blood, or, in other words, with *inflammatory products.*

From their analogy with the affections to which I have just referred, and particularly with the furunculi, it is easy to show that other appearances also, including cutaneous tumours (Knollen), tubercles, papules, wheals, and stigmata (Stippen), owe their origin, for the most part, to similar processes.

In certain cases, however, no fluid inflammatory products exist, nor is there any swelling of the skin, due to the presence of infiltrated matters; nor, on the other hand, is any circumscribed efflorescence to be detected. Under such circumstances, it is often a matter of considerable difficulty to determine the presence of an exudative process. In order, then, to arrive at a correct conclusion we must observe whether the skin is, in any degree, reddened or contains pigment, and also whether there is any desquamation of the cuticle, which, being developed abnormally under the influence of the inflammatory exudation, is in some of these cases continually being cast off. For the hyperæmiæ, strictly so called, do not present these appearances of pigmentation and desquamation.

Now, just as inflammatory affections constitute the largest part of the complaints to which other organs of the human body are liable, so is it also with the diseases of the skin. A great majority of the dermatoses, in fact, arise from exudative processes.

The skin-affections belonging to this class being, then, so numerous, we must subdivide them in some way, in order to obtain a general view of them. As the basis of such a classification of the exudative dermatoses, I have adopted the *course* taken by these diseases, because it enables me to separate a considerable number of them from another group of no less size. Certain of these affections, in fact, terminate within a short period of time; their duration is definite, and may be foretold at their commencement; and the symptoms which they present for observation are of a somewhat limited kind. But in others among them the development and involution of the eruption take place much less quickly, and these diseases are altogether of much longer duration, from the repeated relapses which they undergo.

Adopting the usual mode of expression, I shall speak of the former group of affections as acute, and of the latter, as chronic; I shall, in fact, divide the diseases of the skin, caused by inflammatory processes, into two orders, the *acute* and the *chronic*.

Both these groups may be further subdivided in various ways: according to their causes, into the contagious and the non-contagious, the idiopathic and the symptomatic, the protopathic and the deuteropathic, and the like; or, again, according to the external form which they present, into the papular, vesicular, pustular, tubercular, and squamous exudative dermatoses.

A.—EXUDATIVE DERMATOSES OF WHICH THE COURSE IS ACUTE.

The affections which belong to this order may at once be further subdivided into two groups, by the fact that certain among them are invariably caused by contagion, and themselves also generate an infectious principle, whereas the others neither owe their origin to contagion nor develope it during their course.

A.—*Acute, exudative,* CONTAGIOUS *Dermatoses.*

The diseases of the skin now to be described resemble one another so decidedly in their symptoms, in their mode of development and retrogression, in their tendency to run a typical course, and in the sympathetic disturbance of the whole organism with which they are accompanied, that they are regarded by many writers (among whom are Alibert, Fuchs, Dietl, Upman, and others) as members of a distinct pathological family.

Now, I do not agree with the opinion that diseases in general are capable of being arranged in natural families, like minerals, plants, animals, or other specimens. And yet I cannot but admit that there is, in many respects, a most striking uniformity in the symptoms which characterise the acute, contagious, exudative affections of the skin, and that, at first sight, it appears tempting to regard them as standing in the same relation to one another as do the species which make up a natural family. But, according to the views held at the present day of the nature of pathological conditions, we must altogether abandon ontology, and regard diseases as having no existence *sui generis*, and as consisting, not of individuals, but merely of changes affecting natural products, and occurring in individual persons. Hence the principle of the natural system cannot be applied, with correctness, in the classification of cutaneous, any more than of any other diseases.

And yet I am forced to adopt the fundamental idea of the natural system in the classification of skin-affections, and particularly of the exanthemata, as of all systems the most adapted for the easy comprehension of these diseases, and as satisfying most fully the practical requirements of both teacher and learner. This is, indeed, seen in no class of diseases more prominently than in those now to be described, which I group together under the name of EXANTHEMATA *par excellence.* The attempt has indeed been made, both formerly and within a recent period, to give to this term a more general meaning, and to apply it to diseases which are chronic, as well as to those which run an acute course. I am, however, of opinion, that it is better to reserve for the group of affections with which we are now immediately concerned a name which may be common to them all; and, for this purpose, I find no expression more suitable than the word *exanthem.* I understand, then, by an exanthem, *a disease which* *attacks the whole organism, is attended with febrile symptoms, presents certain definite appearances upon the cutaneous surface, developes a contagious principle, and, lastly, runs an acute course, the duration of which can be computed beforehand.*

The common nature of the exanthemata is shown by the following circumstances:

(1) They are all preceded by a febrile condition of the system, varying in duration from a few hours to several days, according to the intensity of the morbid process and the individual peculiarities of the patient.

(2) The appearances presented by the skin usually develope themselves in regular order, and in stages, the duration of which is determinate, and capable of being predicted.

(3) The length of time during which the rash remains visible and that occupied by its involution, are, both of them, definite, and perfectly well known.

(4) In all these diseases the sympathy of the entire organism is manifested by symptoms of various kinds, both while the rash is present and also after its disappearance.

(5) Lastly, each of these complaints, as a rule, attacks a person only once in the course of his life.

It has long been the practice to divide into definite periods the regular course which, as I have said, the exanthemata observe; but writers have pleased themselves as regards the number of such periods which they have admitted, some having been content with two, others recognising as many as eleven. In my opinion, the only true basis for the establishment of these periods (or stages, as they are called) is an accurate observation of the course of each disease; and it appears to me that, by admitting four such stages, I shall most fully satisfy the requirements of the case.

Thus, I apply the term *stadium prodromorum* to the period which elapses between the commencement of the malady and the first decided appearance of the rash. During this stage the symptoms are chiefly such as are generally called "febrile;" but both the mucous membranes and the nervous system are also commonly disordered to a greater or less extent.

Next comes the *stadium eruptionis,* during which the efflorescence developes itself. This does not at first present any characters from which a diagnosis can be made, for, as is well known, measles, scarlatina, and variola, are, in their earliest condition, very similar to one another. The second stage, indeed, continues only till the marks, peculiar to some one of the exanthemata, make their appearance; and as soon as one can assign to the disease its appropriate name the *stadium eruptionis* ceases, and the third period, the *stadium floritionis*, begins.

This third stage embraces the whole time during which the rash is at its height. Hence this stage has a different duration in each of the exanthemata, and it also varies in individual cases, according to the extent and severity of the eruption. Thus, in slight forms of measles or varicella this period may not last more than a few days; whereas it occupies several days, or even weeks, in the more severe varieties of scarlatina and smallpox.

The fourth stage, the *stadium exsiccationis, desquamationis,* seu *decrustationis,* commences at the time when the morbid phenomena peculiar to the exanthem begin to subside: that is, in morbilli and scarlatina, when the redness disappears; in smallpox, when the drying up of the pustules commences. As, however, the morbid changes in the skin, due to the exanthematic process, vary greatly in the different exanthemata, and also in each particular case (according to the extent and severity of the disease), this stage, likewise, is of uncertain duration, and must, in fact, be regarded as terminating only when the health is fully established.

I consider it superfluous to establish either a *stadium finis* seu *reconvalescentiæ,* or a *stadium acmes.* This last-mentioned stage, during which the rash is just at its height, has been admitted by many observers; but its limits are to a great extent arbitrary, and its recognition is attended with no practical advantage whatever. It appears to me, also, that no detailed description is required of the stage of *incubation* or *latency,* between the moment of infection and the beginning of the *stadium prodromorum,* for the simple reason that, during this period, there are no symptoms of any kind to indicate the presence of disease.

On the other hand, I think it useful, both to the learner and the teacher, to distinguish, in each of the four periods I have named, the symptoms resulting from the febrile state of the organism, from those due to the implication of particular organs or systems, and also from the morbid appearances presented by the skin. We shall, then, in each stage of the disease, take into consideration three separate groups of symptoms—the *febrile,* the *concomitant,* and the *exanthematic.*

A further subdivision of the exanthemata, although not indispensably necessary, can yet hardly be avoided. For, while scarlatina and measles present merely a reddening of the skin, with small papules, or (in exceptional cases) vesicles, and have therefore been termed the *exanthemata glabra* (Hildebrand), variola and vaccinia are characterised by the simultaneous development of vesicles and pustules, and are consequently named the *exanthemata scabra.*

B.—*Acute, exudative, but* NON-CONTAGIOUS *Dermatoses.*[1]

The morbid changes in the skin, which I group together under this appellation, have in common the following characters:

(1) The course of these diseases is acute, and they are of short duration, although, in certain exceptional cases, they may be prolonged by the occurrence of relapses.

(2) The different symptoms succeed one another in regular order; in other words, each of these affections has a definite typical course.

(3) No contagious principle is developed during their progress, although they may in some instances (as, for example, in the case of *glanders*) be generated by the transference of a poison from one of the lower animals to man.

So far as their external appearance is concerned, these diseases may naturally be divided into the following groups:

(*a*) Certain of them do not go beyond the formation of red maculæ, tubercles, or wheals. It is quite exceptional for these affections, at any stage of their existence, to give rise to any other form of efflorescence, although in the *urticaria bullosa* we have an example of such an occurrence.

(*b*) In certain of them, again, the inflammatory character is peculiarly prominent. The distinctions between these diseases are based either on their causes alone, or on the extent to which the eruption is diffused over the cutaneous surface, or, on the other hand, on its being confined to some particular part, or affecting only certain strata of the integument.

(*c*) Under this head are also comprised those diseases of the skin characterised by the development of serous exudation beneath the epidermis, so as to form vesicles or bullæ.

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[1] v. p. 196 of the original German.

Thus, then, the cutaneous affections which I place among the *acute, exudative, non-contagious dermatoses,* are divided into the three following groups:

I. The *polymorphous erythemata* (polymorphe Erytheme).
II. The *dermatitides.*
III. The *phlyctænoses.*

I.—*The Polymorphous Erythemata.*

It is well known that the terms *erythema* and *roseola* were applied by Willan, so as to comprise certain cutaneous affections characterised by reddening of the surface, and that this writer did not take into consideration the question whether the rash in a particular disease is caused by mere transitory hyperæmia, or by a more or less persistent vascularity of the part, attended with exudation into the tissue of the skin. But it has been shown by clinical observation that certain among these appearances are, in reality, thus transient, and caused merely by slight vascular injection. Such fugitive rashes, when spread over large parts of the surface, are termed *erythemata;* but when they present isolated red maculæ, of the size of a finger-nail, they receive the name of *roseola.* In either case, however, they are to be regarded as mere symptoms, and not as independent diseases.

Hence I have thought it necessary to separate these from those other erythemata and roseolæ which require to be looked at as distinct maladies, not only on account of their longer duration, but also because they undergo successive metamorphoses, and are attended by various symptoms, which show that the whole system is involved in the disease; and it seems to me that when I thus employ the names erythema and roseola to designate affections which are not all of the same kind, the fault lies not so much with me, as with Willan and others, who have arbitrarily, and without distinction, applied these terms to different forms of disease. It would have been easy for me to coin new names for affections which come under this head; but, having already had to point out that in dermatology the vocabulary is even now too rich, and that there are, in fact, fewer diseases of the skin than names for those diseases, I have thought it more advisable to retain the old appellations. I shall, however, in referring to the forms of *erythema* and *roseola,* due to exudative processes, add to each of these terms the epithet "exudative," in order to distinguish these affections from those previously spoken of.[1] The third disease, *urticaria,* included in the same group, of course requires no such addition to its name.

The following is the general description of the polymorphous erythemata. The rash present in these diseases consists either of red, and for the most part distinct maculæ, or of raised, colourless papules, tubercles, or wheals, or, again, of large elevated patches, formed by their coalescence. These eruptions are never of long duration. Very often they undergo no further changes, disappearing without giving rise to any desquamation or to pigment-deposit; but, in certain cases, they last somewhat longer, spread over the surface of the skin, present various changes in their form, and, under such circumstances, are generally followed, when the redness has subsided, by one of the above-mentioned appearances. No concomitant or febrile symptoms essentially belong to these diseases. Cases in which they run their course without fever, and at no period cause any disturbance of the health of the patient, are as frequent as those in which various febrile or other symptoms are observed during the presence of the rash. Under the head of polymorphous erythemata, I include the following diseases:

1. *Erythema exudativum.*
    (*a*) Erythema exudativum multiforme.
    (*b*) Erythema nodosum.
2. *Roseola exudativa.*
3. *Urticaria.*

II.—*The Dermatitides proper.*[2]

Under the name of *inflammations of the skin,* in the strictest sense of the term, I group together a number of morbid conditions, in which the ordinary signs of inflammation are present in the most marked degree. These signs are, as is well known, redness, heat, swelling, and pain (including itching and feelings of tension). The nutrition of the part is also perverted, and, in consequence, its functions are disturbed. The diseases to which I now refer are also attended with all those changes to which, from the first, the terms "results of inflammation," "products of inflammation," have been applied, and which were formerly regarded as the principal evidence of the presence of an inflammatory process. Under these are included exudations (whether fluid or solid), enlargement of the part (either for a time or permanently), healthy or unhealthy suppuration, gangrene, &c.

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[1] v. pp. 4, 50, et seq.
[2] v. p. 215 of the original German.

I am not ignorant of the fact that there is among authors a wide divergence of opinion with reference to the inflammatory affections of the skin. Indeed, some writers (as, for example, P. Rayer) include almost all acute cutaneous diseases under the head of inflammation, dividing this into the exanthematic, the simple, and the phlegmonous; while others (among whom is Fuchs) restrict within very narrow limits the use of the word dermatitis, applying it only to certain idiopathic processes, in which the symptoms of inflammation are present in the most marked degree.

Now, I cannot express my concurrence in either of these views. On the one hand, I do not regard the exanthemata as mere inflammatory affections, and certainly not as inflammations of the skin alone, believing them to depend rather upon a toxic action, affecting the whole organism. This toxic action may accidentally produce in the skin changes resembling those due to inflammation, but, as is indeed well known, does not invariably give rise to any such appearances. In fact, these diseases sometimes run through their whole course, in a tolerably severe form, without localisation in the skin, being then termed the *variola, morbilli, scarlatina sine exanthemate.* So, again, the cutaneous affections which I have grouped together under the name of the *polymorphous erythemata,* are not inflammations of the skin in the stricter sense of the word, because redness is almost the only symptom of inflammation which they present; and they also differ widely from the forms of dermatitis proper, with which we are now concerned, not only in their course (for, as a rule, no inflammatory products are thrown out in these diseases), but also in the nature of the morbid changes in the skin to which they give rise.

In spite of these reasons for distinguishing the exanthematic and erythematous inflammations of the skin from the dermatitides proper, I am, however, convinced that no absolute line of separation can be drawn between them, and that many cases occur which can with difficulty be made to accord with the distinctions laid down; of this we have an instance in the *Urticaria bullosa.* But I find some consolation for this in the fact that it is not possible, in any one of the natural history sciences, to carry out a systematic arrangement with perfect strictness. Moreover, there are many other instances, as, for example, in cases of syphilis and scrofulosis, in which morbid affections of the skin, although setting in with inflammatory symptoms, are yet not classed among the dermatitides.

It remains to deal with the other view, of which I took Fuchs as the representative. This writer will not even admit the inflammatory character of erysipelas, but labours to prove that great differences, exist between a simple inflammation of the skin (phyma, dermatitis), and erysipelas or furunculosis. This opinion, again, I am unable to adopt, for I cannot find, in the appearances which manifest themselves during these diseases, the distinctions on which Fuchs lays so much stress. I think, too, that it would be difficult to prove that erysipelas, in which redness, swelling, heat, &c.—in fact, all the symptoms of inflammation—occur almost in a typical form, cannot be an inflammation of the skin, because (in the opinion of this writer) it is caused by disease of the digestive organs, and particularly of the liver. Indeed, suppuration, ulceration, and gangrene — the results of inflammation, as they are termed in the older medical and surgical works—seldom come under the observation of the physician in so marked a form as in this disease, which (even in the sense of the natural-historical school) cannot but be regarded as an erysipelatous inflammation of the skin. It is also necessary to remember that in the dermatitides the morbid products do not always bear the impress of their cause so plainly as to afford a basis sufficient for the purposes of classification. For example, the yellow colour of an exudation is not due to the admixture of biliary matter, as is assumed by the natural-historical school of pathologists, in accordance with the views of Schönlein. This appearance in reality arises merely from the presence of a small quantity of the colouring matter of blood.

In saying this I do not, however, mean to assert that inflammations of the skin are due to local causes merely, and are to be regarded as affections of the integument alone. I, as well as others, know that these diseases arise sometimes from injuries acting directly upon the skin, sometimes from deleterious influences, dependent either on certain peculiar animal poisons or on affections of internal organs, or even of the whole system. We are, therefore, completely justified in dividing the inflammations of the skin into the idiopathic and the symptomatic. But, nevertheless, it must not be forgotten that, in either case, the characters of inflammation are present, and that the appearances by no means differ so decidedly as to form in themselves a sufficient basis for diagnosis or for classification. Hence I adopt, for these purposes, the anatomical subdivisions given by my colleague Rokitansky,[1] and distinguish the inflammations of the skin according to their seat, and the course which they run, into the erythematous and the phlegmonous. Of these two forms, the first affects merely the superficial layers of the cutis, and principally the papillæ, while the second involves the whole thickness of the skin, as well as the subcutaneous connective tissue.

These varieties of dermatitis may be distinguished from each other both in the dead body and during life; and therefore the recognition of them as separate forms of disease is quite in accordance with the requirements of clinical observation.

The symptoms of the *erythematous* inflammation of the skin consist in a rose- or blood-red coloration, disappearing under pressure, and in a slight degree of swelling, caused by serous exudation or œdema. In this affection the tension of the skin is inconsiderable, and little or no pain or itching is complained of. Its course is always acute, and its chief peculiarity is that it generally terminates in the absorption of the inflammatory products, followed by deposit of pigment or by desquamation of the cuticle. It rarely happens that either vesicles, bullæ, or pustules, develope themselves in this form of dermatitis; and there is never any deeply seated suppuration, attended with loss of substance, or followed by the formation of cicatrices.

In the phlegmonous inflammations of the skin, on the other hand, the swelling is more considerable, and the redness is more intense, seldom disappearing entirely beneath the pressure of the finger. The inflamed parts of the skin are also indurated to an extreme degree throughout their whole extent; this being due to the infiltration of the cutis, and also of the subcutaneous tissue, with solid exudation-matter, and of course giving rise to great tension and severe pain. The phlegmonous forms of inflammation of the skin are always attended with healthy or unhealthy suppuration or with sloughing.

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[1] 'Lehrbuch der pathologischen Anatomie,' 3te umgearbeitete Auflage, Wien, 1855, Band ii, p. 59.

It is obvious that, in the case of an organ offering so large a surface as the skin, the extent to which an inflammatory affection spreads must be a very important character, and must necessarily modify the other symptoms. Hence it is needful to draw attention to the fact that both the erythematous and the phlegmonous forms of inflammation of the skin are sometimes *circumscribed* and confined to a limited area, sometimes *diffused* and spread over large tracts of skin; indeed, looking at them from this point of view, we might divide these affections also into a *Dermatitis circumscripta* and a *D. diffusa.*

Both Rokitansky and I have, moreover, classified the inflammations of the skin on a third basis, according to the *nature of their cause,* separating, in fact, the *idiopathic* from the *symptomatic* forms of these affections. For in practice we have frequent occasion to distinguish the varieties of dermatitis produced by local influences (such as wounds, toxic agents, heat or cold) from those which are of unknown origin, or the effect of some general disease. This division is, indeed, not only legitimate, but, from a clinical point of view, particularly useful. But we must not trust entirely to the appearances observed on the skin, in endeavouring to determine, in a particular instance, whether the affection is idiopathic or symptomatic. In this, as in all other cases, we have to take all the symptoms into account, and must endeavour to refer to their true source each one of the phenomena which simultaneously present themselves.

For the reasons just stated, I have adopted the last-mentioned characters as the basis of my classification of the dermatitides, distinguishing them into the idiopathic and symptomatic. Under each of these heads I have also made further subdivisions, according to the anatomical characters of the disease (whether erythematous or phlegmonous), and also according to its distribution (whether circumscribed or diffuse).

Tabular view of the various forms of Dermatitis.

A.—*Dermatitis Idiopathica.*

- α.
  - *a.* erythematosa.
  - *b.* phlegmonosa.
- β.
  - *a.* circumscripta.
  - *b.* diffusa.

Dermatitis Traumatica.
,, *Venenata.*
,, *Calorica.*

B.—*Dermatitis Symptomatica.*

a. erythematosa . . . . . *Erysipelas.*
b. phlegmonosa . . . . .
    (*a*) circumscripta . . *Furunculus, Anthrax.*
    (*b*) diffusa . . . . *Pseudo-erysipelas.*

III.—*The Phlyctænoses.*[1]

Under this term I include those acute exudative diseases of the skin, of which one of the characteristic appearances is the accumulation of fluid beneath the epidermis, so as to form vesicles or bullæ. These present, in different cases, very varied forms, and may be grouped in different ways. They always, however, subside spontaneously within a short time, and their duration may be predicted with considerable accuracy. Some of these diseases have no liability whatever to return, and those which sometimes recur do so only after the lapse of a considerable time, so that the complaint may then be looked at as a fresh attack rather than as a *relapse*, in the proper sense of the word. They, therefore, differ essentially from those vesicular affections, such as eczema, in which recurrence is the rule.

I shall have to enumerate under the head of Phlyctænoses the following maladies:

1. *Herpes.*
2. *Miliaria.*
3. *Pemphigus acutus.*

B.—EXUDATIVE DERMATOSES WHICH RUN A CHRONIC COURSE.[2]

In this group I include all those diseases of the skin which, having their origin in those disturbances of nutrition termed the exudative or inflammatory processes, and presenting in general the symptoms already described as characteristic of those processes, yet differ from the other affections belonging to this class in their tendency to repeated relapses, and, consequently, in the protracted course which they run. The chronic exudative dermatoses are distinguished from one another chiefly by differences in the cutaneous eruptions present in these diseases. Indeed, they are, for the most part, attended with no *febrile* or *concomitant* symptoms, and therefore our attention is directed principally to the so-called *exanthematic* symptoms which they present.

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[1] *Vide* p. 248 of the original German.
[2] *Vide* p. 270 of the original German.

In arranging systematically the skin-affections which come under this head, one has recourse, involuntarily, to the classification of Plenck and Willan, which will indeed, in my opinion, always be pre-eminently adapted for this purpose. But I think it desirable to modify this system, so far as to base the distinctive characters of the different groups of eruptions upon several, or rather upon *all* the symptoms present, and not upon only one of them, the accidental *primary efflorescence.* In the first group, then, which I shall term the *squamous chronic dermatoses,* I shall include not only certain skin-affections, namely, *psoriasis* and *pityriasis,* which were described by Willan under the same title, but also those forms of *lichen* which I have as yet had occasion to observe. Hence I define this group as consisting of those cutaneous diseases which manifest themselves by a superficial redness and slight swelling, affecting principally the papillæ of the cutis; which are attended with an excessive growth of the epidermis (Epidermidalwucherung), but only with very trifling sensations of itching, tension, or pain; and, lastly, in which the inflammatory products never break down, ulcerate, suppurate, liquefy, or, indeed, undergo any further metamorphosis whatever.

The chronic exudative skin-affections which are allied most closely to the first group, and naturally come next in order, are those which are attended with intense itching, and which I therefore term the *pruriginous dermatoses.* The common feature of these diseases is, then (besides the characteristic efflorescence which they present), the fact that they irresistibly provoke scratching in consequence of the severe itching by which they are accompanied. This, again, gives rise mechanically, or as a result of the irritation produced by it, to those further changes in the surface of the skin which are known under the name of excoriations, and which form a concomitant symptom, never absent in the pruriginous dermatoses.

The most important distinctive character between the different cutaneous diseases belonging to this group, is the fact that one of them (eczema) is attended with a more or less profuse excretion of morbid products, which ooze from the skin's surface, whereas no such appearance is observed in the others (prurigo and scabies).

The third group embraces those tubercular and pustular affections which arise from inflammation of the hair-sacs and sebaceous glands. These I term the pimply (finnenartig) dermatoses. They have always been recognised as forms of acne, and are, as is well known, distinguished into an *acne vulgaris seu disseminata*, an *acne mentagra* or *sycosis*, and an *acne rosacea*. These skin-complaints are characterised, not only by their peculiar appearance, but also by their invariably affecting some particular region of the body.

The fourth group includes those affections which consist in the accumulation of pus beneath the cuticle, or, in other words, in the formation of sub-epidermidal abscesses or *pustules*. Now, there are but few diseases of the skin in the course of which pustular eruptions may not present themselves. The pustules are then, however, for the most part, merely accessory appearances, unless, indeed, they are developed from papules, vesicles, tubercles, or bullæ, previously under observation. But in the affections belonging to the group of which I am now speaking, the pustules are seen from the first, and constitute the whole eruption. In accordance with the nomenclature of Willan, I shall treat of these cutaneous diseases under the names of *impetigo* and *ecthyma*.

The fifth group, lastly, will embrace those chronic affections of the skin which are distinguished by the formation of bullæ, the epidermis being raised by the exudation of fluid in large quantity beneath it. The form of these eruptions is so characteristic that all detailed description of them in this place seems to be unnecessary. I apply to them the usual name of *pemphigus*.

I shall, then, describe the *chronic exudative dermatoses* according to the following scheme:

Group I.—*Dermatoses Squamosæ*. Squamous dermatoses.

1. *Psoriasis seu Lepra Willani.*
2. *Lichen exudativus.*
    a. *ruber.*
    b. *scrofulosorum.*
3. *Pityriasis rubra.*

Group II.—*Dermatoses Pruriginosæ.* Pruriginous dermatoses.

1. *Eczema.*
    - a. *squamosum = Pityriasis rubra.*
    - b. *papulosum seu lichenoides.*
    - c. *vesiculosum = Eczema solare Willani.*
    - d. *rubrum seu madidans.*
    - e. *impetiginosum seu crustosum.*
2. *Scabies.*
3. *Prurigo.*

Group III.—*Dermatoses Acneiformæ.* Acneiform dermatoses.

1. *Acne vulgaris seu disseminata.*
2. *Sycosis seu acne mentagra.*
3. *Acne rosacea.*

Group IV.—*Dermatoses Pustulosæ.* Pustular dermatoses.

1. *Impetigo.*
2. *Ecthyma.*

Group V.—*Dermatoses Pemphigosæ.* Pemphigous dermatoses.

1. *Pemphigus chronicus.*
    - a. *pemphigus vulgaris.*
    - b. „ *foliaceus.*
2. *Rupia.*

CHAPTER VIII.

MORBILLI, MEASLES.[1]

(CLASS IV.—ACUTE, EXUDATIVE, CONTAGIOUS DERMATOSES.)

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The word *morbilli* is derived from the Italian *morbillo*, which means the *little disease*. Measles received this name to distinguish it from the plague, which was then known as *il morbo*.

It cannot be positively proved, from the works of either the Greek or the Roman writers, that this complaint existed in ancient times. Rhazes was probably the first to introduce a knowledge of it into Europe: but long after his time it was confounded with miliaria and scarlatina.

The merit of having shown measles to be altogether distinct from scarlatina must be ascribed to Forestus and Sydenham, the former of whom gave an account of an epidemic of measles which occurred in Brabant in 1580, while the latter described one which prevailed in London from the year 1664 to 1670.

The now abundant literature of this subject does not date further back than the last century. It has been collected in as complete a form as possible by J. Frank and Canstatt.[1] The following writings, however, deserve to be specially mentioned :—*Heyfelder* ('Schmidt's Jahrbücher,' 1835, Band viii, p. 105). *Gertsema, Marcus Busch*

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[1] This chapter is translated in full from the German edition, except that, with the sanction of Prof. Hebra, most of the details with reference to the complications and sequelæ of measles have been omitted; it being thought that a lengthy description of these affections hardly comes within the province of a work on cutaneous diseases.—[Ed.]

[2] 'Jahresbericht,' Band ii, p. 107.

('Specimen Med. Inaug. de Affinitate Morbillorum cum Scarlatina,' Gröningiæ, 1844). *Tilgen, Henricus Gulielmus* ('De Similitudine et Dissimilitudine Scarlatinæ, Morbillorum, Rubeolarum, et Typhi,' Bonn, 1844). *Rilliet* ('Mémoire sur l'Epidémie de rougeole qui a régné à Genève dans le premier mois de l'an 1847'). *John Brown* ("On the Epidemic Measles of 1854 in Leith," 'Edinburgh Monthly Journal of Medicine,' 1855, vol. xx, pp. 299, 385).

Symptoms.

Definition.—The disease known as *morbilli* or *measles* (Rubeola, Masern, Flecken, Rougeole) is characterised by an eruption consisting of maculæ or papules, distinct from one another, and scattered over the whole cutaneous surface. It is accompanied with fever, and with a catarrhal affection of the respiratory mucous membrane. It runs an acute course, and spreads by contagion.

It was laid down by Rilliet and by Chomel that the so-called period of latency or incubation, between the infection of the organism with measles and the appearance of the eruption, has a duration of about a week.

These observers did not, however, institute any direct experiments for the purpose of deciding this point; but their statements have since been fully confirmed by the results of inoculating other individuals with either the blood or the nasal mucus of patients affected with this disease. In this way it has been ascertained that the period of latency occupies at least eight days, and may even, in certain cases, last as long as three weeks. During this time the infected person appears perfectly well, or may occasionally experience an uncomfortable feeling, which is, however, of an indefinite character, resembling sometimes fatigue, sometimes nausea, or some kind of painful sensation. In certain cases the pulse is slightly accelerated towards the end of this period; but this does not give rise to any serious consequences.

I. *Stadium Prodromorum.*

Febrile Symptoms.—These present no special peculiarities from which one could, with certainty, infer that the eruption of measles is about to make its appearance. Hence the expression *febris morbil-*

losa, if used in this sense, is incorrect. The phenomena observed during this period are, in fact, the ordinary and well-known symptoms of fever—alternating sensations of cold and heat, pains in the joints, prostration, headache, and dryness of the skin. Their intensity is greatest in the evening.

Concomitant Symptoms.—The existence of an inflammatory affection of the conjunctiva and the respiratory mucous membrane is more decisive as to the nature of the complaint than the presence of fever.

The interior of the nose seems to be the original seat of this catarrhal inflammation, which spreads thence to the conjunctiva, as well as to the larynx and trachea, without always affecting the mouth or fauces. This affords an explanation of certain of the symptoms of measles—such as the sneezing, the discharge of mucus from the nose, the feelings of weight over the forehead and eyebrows, the oftentimes repeated epistaxis, the punctated reddening of the caruncula lachrymalis and conjuctiva generally, and, lastly, the lachrymation and intolerance of light (*Ophthalmia morbillosa*). The affection of the mucous membrane of the trachea is generally indicated by a hollow cough, quite dry or attended with but slight mucous expectoration, by a feeling of oppression beneath the sternum, and, sometimes, by a tickling or burning sensation in the throat. It is true that these symptoms likewise accompany other catarrhal complaints; but in measles they spread and increase in severity so rapidly that, even while the exanthem is still latent, we can often predict, almost with certainty, that it is about to break out. This is particularly the case during the prevalence of an epidemic of morbilli.

Exanthematic symptoms.—These are, of course, altogether wanting during this stage.

Duration.—This period usually lasts from three to five days, but may seem to be much shorter, because the first slight affection of the nasal mucous membrane often appears some days before any other symptom, and may then entirely escape observation. In this case it is only when the more severe catarrhal symptoms, attended with fever, set in that the presence of the disease is noticed. On the other hand, in persons previously in ill health, and particularly in those who are rachitic, tuberculous, or scrofulous, this stage may be prolonged to a remarkable extent, so as even to last as long as ten days.

II. *Stadium Eruptionis.*

Febrile symptoms.—The fever gradually increases in intensity, as is shown by the pulse becoming more and more quick, so that it may even beat 140 times in the minute. Convulsions and other head symptoms often arise in children, and a turgescence (Turgescenz) of the skin is observed, the surface of the body being also, in most cases, dry. As a rule, this period commences on the thirteenth day after infection with the disease.

Concomitant symptoms.—Those present during the previous stage acquire an increased severity, but, generally speaking, no fresh ones make their appearance. Andral states that he has found the intensity of the concomitant symptoms to be in an inverse ratio with the amount of the eruption in those cases in which there is already great depression of the strength, or in which some affection of the respiratory organs has set in even during this stage. Isolated symptoms of cerebral or nervous disturbance, however alarming they may appear, are in reality, even in children, less to be dreaded during this period of measles, than in scarlatina or smallpox.

Exanthematic symptoms.—The eruption appears first on the temples and back of the neck, afterwards spreading forwards over the swollen face and the forehead, downwards to the throat and the upper part of the chest, and backwards over the neck and the upper dorsal region.

It consists of distinct maculæ or minute red points (Pünktchen), raised above the surface, and often to be detected by the touch rather than the sight. At this time the rash cannot in any way be distinguished from a commencing smallpox efflorescence. Within twenty-four hours, however, the maculæ and papules become considerably larger, and are, therefore, more plainly visible; and the deep red colour of the eruption, its distribution over large tracts of the surface, and its uniform character, then enable us to make a positive diagnosis of the nature of the disease.

The rash of morbilli is of the precise colour which is obtained by adding a little yellow or brown to a red pigment.

III. *Stadium Floritionis.*

Febrile Symptoms.—These generally increase in proportion as the development of the efflorescence advances, and diminish as it subsides.

Concomitant symptoms.—The various affections above mentioned now gradually disappear: the intolerance of light ceases; the punctated redness of the conjunctiva is no longer to be observed; the lachrymation subsides; the secretion of the nasal mucous membrane becomes more viscid and of a yellowish colour; the cough is less frequent, and is attended with the expulsion of a thick yellow matter *Sputa blennorrhoica*), which forms large masses of jagged outline (wie gezackt), and bears, according to Chomel, a very close resemblance to the sputa of phthisical patients. It is, however, more probable that this kind of expectoration arises from a croupous inflammation of the mucous membrane of the trachea and bronchial tubes.

Exanthematic symptoms.—At the time when the rash is at its height the maculæ are as large as hemp-seeds, or even beans. These spots are, however, formed by the coalescence of several smaller ones which were at first distinct, whereas the papules (in that form of the disease known under the name of *morbilli papulosi*) remain still isolated from one another. The maculæ have sometimes an irregular or jagged outline, which often presents peculiar semicircular curves. The skin between them is always of the natural colour; there is no tendency in measles, as there is in the different forms of erythema, for the maculæ to enlarge, and spread over the adjacent parts of the cutaneous surface. In exceptional cases, and principally in newly born infants, the rash of morbilli is made up of fine red points.

Having thus developed itself, the efflorescence next spreads in regular succession over the upper limbs, abdomen, back, genitals, and loins; and, last of all, appears on the lower extremities. It does not altogether spare even the palms of the hands or the soles of the feet.

The rash of measles, then, extends to more remote parts, according to their distance from its original seat; and experience does not altogether confirm the statement of those writers who describe it as affecting the different parts of the body in the same order as small-pox. The rapidity of its diffusion is in direct proportion to the youth of the patient, but it is generally completed by the end of the third day. Soon afterwards, that is, early on the fourth day, it begins to subside. Except that it fades more quickly on exposed parts of the surface than on those which are covered with clothes, its disappearance takes place in the same order as its development. The skin does not resume its natural appearance as soon as the rash has subsided; the seat of each red macule or papule being always occupied for a time by a spot or a papule containing pigment-deposit. The depth of the colour thus produced varies with the severity of the disease and the intensity of the previous efflorescence, but we can, even at this period, recognise the nature of the complaint by the uniform distribution of these spots of pigment over the whole cutaneous surface.

This exanthem does not attack the mucous membranes in the same way as the skin. If the morbid process is very intense, a plastic exudation may indeed be formed upon the mucous surfaces. But, generally speaking, the extension of the complaint to these structures is shown only by their secreting action being increased. This is observed, during life, chiefly in the case of the palpebral conjunctiva; but in the dead body it may be shown that the lining membrane of the nose and that of the air-passages are similarly affected.

IV. *Stadium Desquamationis.*

Febrile symptoms.—When the disease runs its ordinary course these are altogether wanting.

Concomitant symptoms.—The affections of the mucous membranes observed while the rash is present have now, in most cases, altogether disappeared, or at least give rise to scarcely any symptoms. Those who maintain that there is an *enanthematic* as well as an *exanthematic* process lay stress on the fact that the disease is followed by a desquamation of the epithelium of the mucous membranes affected by it. There is, however, nothing peculiar in this occurrence, which is observed after catarrhal complaints of every kind. Indeed, no increase in the amount of epithelium contained in the urine or fæces is to be detected so long as these excretions remain normal, which, in measles, is usually the case.

Exanthematic symptoms.—During this period the cuticle becomes detached in the form of branny scales, which make their appearance first on the exposed regions of the body, that is, on the face, neck, and hands. They are observed most distinctly on certain parts of the face (such as the temples, the sides of the nose, and the chin) and on the neck, the upper half of the chest and forearms. In other regions there may be scarcely any discoverable desquamation, or even none at all, particularly if the skin is constantly in a state of profuse perspiration. The separation of the scales is not generally completed till after the fourteenth day, reckoned from the first appearance of the efflorescence.

Irregular Forms of Measles.

This disease does not always follow the typical course which I have been hitherto describing. Indeed, many cases, especially in children, are met with in which there are irregularities in the length of the different stages, or modifications of various kinds in the symptoms. For example, even in healthy persons the period of incubation is often prolonged to two or three weeks without our being able to assign any cause for this occurrence. The same thing happens still more frequently when the individual is already the subject of disease, and particularly in children affected with some neurosis, or with anæmia or rachitis. Again, in patients suffering from any of these complaints the *stadium prodromorum* may be lengthened so as to last a week or even ten days, the period of latency being, in this case, of normal duration; and, in exceptional instances, either of the other stages may be protracted in a similar way. Hence, the modifications of morbilli evidently require to be described in detail, and for this purpose I shall arrange them as follows:—

1. *Varieties in the Localisation of the Rash.*

The way in which the eruption of measles spreads, affecting in regular succession different parts of the cutaneous surface, is one of the most constant, and for the purposes of diagnosis one of the most essential characters of this disease. But it does occasionally happen that, instead of appearing on the face, the rash is first seen on some distant part of the body. Thus, if the patient has been lying for some time on one side it may commence on that arm; if ointments, plasters or lotions have been applied to the chest, it may present itself first in that region; if any part of a limb is compressed by tight bandages or articles of clothing, the efflorescence may make its appearance at that spot.

In other instances, again, in which this eruption affects the different parts of the body in regular order, it is very imperfectly developed. Thus, its presence may be confined to the face and trunk, no trace of it being seen on the limbs. This is observed chiefly in cases of spinal disease (*Spondylarthrocace*), in which the rash is often altogether, or, at any rate, very nearly, absent on the paralysed lower extremities.

In some cases of measles, too, independently of the presence of any other disease, the efflorescence is almost limited to the face and neck, the maculæ being so sparingly distributed over other parts of the body that one could count them without much trouble. This variety of the rash is observed chiefly when an epidemic is either beginning or just about to subside.

2. *Varieties in the Duration of the Stadium Floritionis.*

In severe epidemics of Morbilli attended with intense catarrhal symptoms, it is not uncommon to find the efflorescence remaining visible during a week or even ten days. In such cases, however, it usually undergoes certain changes in character, the original yellowish or brownish-red colour passing into a bluish or dark brown tint, which no longer fades beneath the pressure of the finger. These spots of pigment are not infrequently observed in patients suffering from some other eruption, such as eczema, lichen, scabies or pityriasis. But if the skin was previously healthy, these maculæ must be regarded as being due to the presence of some severe internal disease.

A symptom which, not without reason, excites alarm, is the premature disappearance, or sudden fading, of the efflorescence. This arises from some internal malady, rather than from any external influence, and therefore its cause must always be carefully investigated.

It has been supposed that in these cases the eruption *recedes* from the cutaneous surface, and undergoes metastasis to more im-

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portant parts. But this belief is not supported by a close examination of the facts. For, *before* the rash fades or disappears, the internal disease is always present—a proof that this disease is the cause, and not the effect, of the disappearance of the rash. The opinion generally held is the very opposite of this; the visceral affection being, by most writers, ascribed to the exanthematic eruption alone of all the symptoms of measles. In these cases, as the internal or general complaint subsides, the maculæ not unfrequently reappear. But it must not be supposed that a fresh eruption is formed under these circumstances; the return of the efflorescence is due merely to the renewal of the former hyperæmic condition of the skin.

According to Willan and Peter Frank, a second eruption sometimes appears in cases of measles, when desquamation is commencing. This affection, however, ought probably to be regarded as a Roseola, such as is not rarely observed in little children in whom the skin is delicate. It is not generally attended with any febrile symptoms, and its occurrence is a matter of no importance.

3. *Prolongation of the period of Desquamation.*

This is generally caused by some protracted sequela of measles. Rubbing fatty substances into the skin may appear to interfere with the process of desquamation, and to diminish its amount, but does not in reality produce these effects.

4. *Morbilli Apyretici.*

The non-febrile variety of measles is the mildest form of the disease. It cannot indeed be said, that any cases of morbilli are absolutely "*sine febre*," but the existence of fever may certainly be indicated only by the occurrence of slight evening exacerbations, by a trifling acceleration of the pulse, and by the existence of slight malaise and depression. This form of measles is observed chiefly during the early part of an epidemic.

5. *Febris Morbillosa sine exanthemate.*

This may be stated to be a "*Febris catarrhosa*" of the nasal, tracheal, or bronchial mucous membrane, appearing during an epidemic of measles, and in persons who have been exposed to the contagion of this disease.

The assertion that this modification of measles is followed by desquamation of the cuticle, is most certainly incorrect. For unless the skin has previously been in a hyperæmic state, or the subject of an exudative process, there is no reason why the epidermis should be shed in an unusual degree. Hence the actual occurrence of consecutive desquamation in such a case must be explained by supposing that a slight rash did exist, but was overlooked.

6. *Varieties in the appearance of the Rash.*

We recognise the following modifications in the form of the eruption of measles:

1. *Morbilli læves.*—This is the form above described, in which the efflorescence is smooth and flat, the hair-sacs not being much raised above the cutaneous surface. The individual maculæ, too, are distinctly separated from one another by tracts of healthy skin. It is the most common form of measles, and is the only one observed in certain epidemics.

2. *Morbilli papulosi.*—In this variety of the disease, there appear dark red or reddish-brown points (Stippen), or papules, the size of millet or hemp seeds, containing pigment, and seated at the mouths of the hair-follicles. In such cases the rash presents the greatest possible resemblance to that of smallpox, and its real nature can be recognised only by its uniform distribution over the cutaneous surface, and by the greater amount of pigment contained in the papules. This form of measles, again, occurs chiefly in certain epidemics, taking the place of the more usual variety. The Nirlus (Nirles) of Alibert (the "*Blattermasern*" of Bloest's translation) must also be placed here, being most probably nothing more than a papular form of measles.

3. *Morbilli vesiculosi seu miliares* (*Frieselmasern*). In this variety the mouths of the hair-sacs, being filled with fluid exudation, become raised, and form delicate, transparent, miliary vesicles. This gives the skin a peculiar aspect, resembling that observed in *Miliaria.* Indeed, it is probable that the peculiarities of the efflorescence in these cases are in part produced by the same causes, to which we attribute the formation of the vesicles of miliaria, being due either to profuse sweating or to pyæmic conditions. To this form of measles we ought perhaps to ascribe the epidemics of *miliaria*, which have

been described by certain writers, but are at the present day no longer met with.

4. *Morbilli conferti seu confluentes.*—In this variety of the eruption the maculæ are crowded together, or even confluent. This is, of course, the result of the formation of maculæ or papules in such large numbers that the intervals between them are reduced to nothing, or exist only when the rash first comes out. In fact, there subsequently appear continuous red patches, of considerable extent, but strictly circumscribed, and with deeply indented margins. These patches are observed chiefly on the face, back, and upper and lower limbs. Even in cases of this kind, however, the real nature of the disease may invariably be made out, for we can always find some spots at which the efflorescence is of the ordinary kind, and consists of distinct maculæ. I believe that even in the youngest infants the eruption of measles never covers, uninterruptedly, the whole cutaneous surface.

To this form of morbilli is probably to be ascribed the "*Exanthema hybridum,*" described by Schönlein, and named by him *rubeola.* It is stated that in this disease a scarlatinal rash is associated with the concomitant symptoms of measles.

(5) *Morbilli hæmorrhagici.*—In this variety the efflorescence consists of maculæ or papules which are of a dark red colour, and do not disappear beneath the pressure of the finger. This peculiarity of the rash is the result of hæmorrhage from the capillary blood-vessels of the skin.

7. *Varieties consisting in the combination of other, chronic or acute, skin affections with the Rash of Measles.*

The presence of a chronic cutaneous disease by no means renders a person unsusceptible of the contagion of measles. For instance, children affected with vesicular or pustular eruptions are just as liable to this complaint as those in whom the skin is perfectly healthy.

Under these circumstances the pre-existing skin affection recedes for a time while the exanthem is going through its stages. Moreover, when the fever ceases, the desquamation is, in these cases, unusually abundant. It has, indeed, been maintained by some that this necessarily removes the previous disease. But this statement is incorrect, for after the subsidence of the measles the chronic eruption generally reappears with even greater intensity than before.

As for the combination of morbilli with the other exanthemata, variola and scarlatina, I have never had the good fortune to see two of these diseases *simultaneously* in the same patient. Indeed, apart from the fact that such a diagnosis is in itself attended with very great difficulties, another (and a much more natural) explanation suggests itself in all these cases. Thus, in the instances said to have been observed by Fouquier, Chomel, Moret, and others, of the co-existence of measles with smallpox, the eruption was most likely a *Roseola variolosa.* Again, the supposed combination of scarlatina and morbilli was probably very similar in appearance to the *Scarlatina variegata.* Two of the exanthemata, however, not unfrequently attack, *in succession,* the same individual; and this is observed especially in districts which contain persons affected with each of the diseases in question.

A few bullæ or wheals are not uncommonly present in cases of measles in addition to the maculæ. This, however, does not give rise to any difficulty in diagnosis.

It sometimes happens that a general erythema is associated with the morbillous efflorescence. This, however, is quite an ephemeral condition, and probably arises from the patient, during a severe epidemic, being kept too warm. It is always easy to determine the real nature of such an affection, from its irregular mode of development and of involution, and from its arising at any period of the disease, being unattended with febrile disturbance, and not spreading completely over the whole cutaneous surface.

This form of erythema often appears in patches on the chest and abdomen, and also on the upper and lower limbs, and after remaining one or two days disappears without having perceptibly modified the pre-existing exanthem or leaving behind it any effects whatever. The *rubeola Schönleinii* (the hybrid exanthem resembling scarlatina, to which I have already referred) is probably sometimes merely a rash of this kind, appearing during the *stadium floritionis* of measles. This supposition is the more reasonable because, as is admitted even by the supporters of Schönlein's views, this eruption is never epidemic, being observed only in a sporadic form.

8. *Complications of Measles.*

This exanthem is said to be *complicated* when any one of the various concomitant symptoms observed during its regular course becomes so severe, or so extensively diffused, as to constitute an independent affection. The complications thus produced may very greatly modify the development of measles, or delay, or even entirely stop, the progress of the disease.

The cause of these complications must be sought either (1) in the individual peculiarities of the patient, or (2) in the conditions under which he lives, or (3) in the special characters of the epidemic which prevails at the time.

(1) Persons who present an unhealthy soil for the reception of the morbillous contagion not merely pass through the ordinary exanthematic process, but are at the same time attacked by other affections. This is particularly the case in patients who are liable to inflammatory diseases of the larynx, trachea, or lungs. The same thing, too, is observed in individuals who are (as it is termed) *tuberculous* or *scrofulous*, even though before the measles appeared this condition may have been so little marked that we could scarcely term it more than a *morbid tendency*.

(2) Under this head must be mentioned, that careless or unskilful nursing, closeness or dampness of situation, overcrowding or imperfect ventilation of hospital wards, may be the cause of various complications which do not make their appearance when patients are placed under more favorable conditions.

(3) As I shall hereafter more fully explain, each epidemic of this disease presents its own peculiarities. Thus, whereas inflammatory affections are sometimes very common complications of measles, there is, in other years, a special prevalence of gangrene and dissolution of the blood (Blutzersetzung).

The affections which are liable to complicate measles may be divided into two groups; the first consisting of diseases of the respiratory organs, the second including those of other parts of the body and of the blood.

Certain writers have simply described this exanthem as presenting an *inflammatory*, a *nervous*, and a *putrid* form. But it appears to me that this arrangement is a bad one, not only because it is of too general a kind, but also because it looks to the character of the fever rather than to the nature of the morbid state to which this character is due, and because such a view would lead one to suppose that different species of fever may be present in morbilli. I think that the classification I have proposed is more practical, and that it accords better with the divisions suggested by the actual observation of cases which have taken an abnormal course.

A. Among the complications which form the first group are the following:

(1) *Epistaxis*, or hæmorrhage from the nasal mucous membrane. This is the result of an extreme hyperæmia, and in some cases, and particularly in infants, is so severe as to be dangerous. It appears chiefly during the *stadium prodromorum*, but may occur after the exanthem has developed itself; in which case it sometimes causes the rash to fade, but only when there has been a considerable loss of blood. It is, in some instances, to be regarded as the result of a general dissolution of the blood.

(2) *Ophthalmia.*—The so-called "*morbillous ophthalmia*" in reality differs in no way from a common catarrhal inflammation. It may present itself in any stage of measles, either as a simple conjunctivitis, as a severe inflammatory swelling of the mucous membrane and submucous connective tissue, as a pustular affection, or even, though more rarely, as a *keratitis*. The most common of these is the purulent ophthalmia (Ophthalmoblenorrhoën). Every epidemic of morbilli presents at least scattered instances of this affection, which occurs especially in weakly children, and is most destructive to the organ of vision. This complication does not in any way modify the morbillous rash.

A *croupous* inflammation of the conjunctiva has been observed in certain cases of measles. The exudation covers the lining membrane of the eyelids in the form of streaks or patches, and is of a whitish-gray or yellowish colour, and firmly adherent. When intentionally detached, it is quickly renewed. This affection is attended with considerable œdema of the eyelids, and with severe pain. Its course is always acute, and it often leads to perforation of the cornea.

(3) *Laryngitis.*—Among the symptoms frequently observed during the *stadium prodromorum* of measles is a hoarseness so complete, that the patient can scarcely utter any audible sound. There is, at the same time, a marked exacerbation of the fever; but the breathing remains unaffected, and on physical examination we do not find that the disease has extended to the bronchial tubes or lungs. The complaint is, in fact, simply of a catarrhal nature; but it often passes into—

(4) *Laryngitis crouposa seu diphtheritica* (Croup, Masserncroup). This complication may arise either before the morbillous eruption makes its appearance, or during its decline.

(*a*) When it occurs during the *stadium prodromorum,* croup is far less severe than when it presents itself at a later period of the disease. Indeed, it is commonly spoken of as being merely "*false* croup;" and the name of Laryngitis would be still more applicable to it, for it has nothing in common with true croup except the peculiar tone of the cough. However, in the early stage of measles the varieties in the sound produced by the act of coughing pass so gradually into one another, that it is difficult to draw a clear line of distinction between the catarrhal, the spasmodic, and the croupy forms of cough.

This laryngeal affection subsides, for the most part, as soon as the rash breaks out. It may, indeed, last somewhat longer if it immediately preceded the development of the eruption; but even then it disappears as soon as this has spread over the whole surface of the body, and the fever begins to decline. As is generally the case, however, slight hoarseness remains, and severe attacks of coughing are still attended with more or less of the peculiar sound, throughout the whole course of the patient's illness.

Most of these cases, then, belong to that group of the so-called *croupous* affections, in which the disease results from a catarrhal inflammation of the nasal or tracheal mucous membrane, exciting a severe laryngitis. This complaint, and that which sets in suddenly with the formation of plastic exudation, differ both in the course which they take, and in the degree of intensity of their symptoms.

Again, in the early stage of measles we rarely see either that form of croup which is due to the propagation of an inflammatory affection from the fauces to the epiglottis and glottis, or that which appears as a complication of a croupous pneumonia and bronchitis. I do not mean to say that during this period of the disease a diphtheritic laryngitis is never observed; but its occurrence is certainly exceptional.

(*b*) Croup setting in after the morbillous rash has made its appearance is a much more dangerous complication, and very often leads to a fatal issue. It generally arises on the second or third day of the eruption, and therefore on about the sixth day of the disease, but sometimes not till desquamation has commenced. It is often preceded by a pneumonia or an extensive bronchitis; while, in other instances, it arises from an aphthous or diphtheritic inflammation of the mouth and fauces.

The distinction between the two forms of croup of which I have been speaking is shown most clearly by post-mortem examinations. For when this complication appears in the early stage of measles, death occurs either from bronchitis, pneumonia, or pulmonary œdema, and no plastic exudation is to be discovered in the larynx; whereas in the second form of this complaint croupous inflammatory products are found in the lungs and bronchial tubes, and the larynx contains a yellowish viscid mucus, or even a diphtheritic deposit.

Moreover, granular and membranous forms of exudation are met with in some cases, though more rarely. They generally result from the extension of a diphtheritic affection from the mouth and fauces to the glottis. In other instances, however, this so-called *secondary croup* arises from an inflammation of the lungs or bronchial tubes; we may therefore say that it sometimes *ascends*, sometimes *descends*.

The variety of croup consequent upon diphtheritis of the mouth and fauces affects chiefly children suffering from tubercular disease of the glands, but is in most cases immediately caused by some epidemic influence of an unknown kind. Hence its occurrence is the rule in some epidemics of measles, the exception in others.

The affections of which I have been speaking do not all interfere to the same extent with the progress of the exanthem. Indeed, the false croup in no way modifies either the development or the further course of the eruption. On the other hand, various changes in the appearance of the efflorescence are produced when the disease is complicated by an attack of true croup. In some cases the maculæ remain in the condition which they had reached when the severe symptoms of internal disease first showed themselves, but gradually lose their red colour and form brown pigmented spots, which no longer disappear beneath the pressure of the finger, and may even be visible after death. In other instances the rash disappears altogether, and the skin assumes a livid hue. Sometimes, lastly, the maculæ coalesce in some places into patches as large as the hand; but when the more severe exacerbations of fever arise, the eruption in these cases disappears altogether, and there arises a partial desquamation of the cuticle.

(5) *Inflammation of the Trachea and Bronchial Tubes.*—This, again, appears in two forms, the catarrhal and the croupous,—the former of these being the more common, the latter the more obstinate variety.

These affections are comparatively seldom observed in adults, or, at any rate, do not in them present sufficient intensity to be dangerous to life. Indeed, as fatal complications, they are met with chiefly in infants less than a year old, who are are ill-fed, or the subjects of rachitis or atrophy. In larger and stronger children, however, they are often the precursors of pneumonia or laryngeal croup, and soon pass into one or other of these diseases.

The occurrence of an attack of bronchitis, in either the catarrhal or the croupous form, modifies to a certain extent the course of the eruption of measles. The maculæ, which are in these cases originally much less distinct than usual, at once disappear, leaving behind them, however, in rachitic children, spots of pigment-deposit.

(6) *Inflammation of the Lungs.*—Pneumonia is the most frequent complication of morbilli. Indeed, the cases in which it is present were at one time recognised as a variety of the disease, under the name of *Morbilli inflammatorii.* Now it appears to me important to distinguish between the lobar and the lobular form of inflammation of the lungs accompanying measles. Lobar pneumonia may arise either at the commencement of the catarrhal fever or when the disease is at its height, being in the latter case the result of the extension of inflammatory action from the bronchial tubes to the air-vesicles. Its onset is sometimes sudden and violent, as in cases of ordinary inflammation of the lungs; sometimes (and particularly in weakly, and scrofulous or rachitic children) so insidious, that its presence cannot be discovered without a physical examination of the chest.

The lobular form of pneumonia, on the other hand, is more often consecutive to, than a complication of, measles; and even when it does arise during the course of this disease, it persists long after the termination of the exanthem, and forms one of the most obstinate of its sequelæ; among which, therefore, I shall again have to speak of this affection.

The course of morbilli is modified by inflammation of the lungs more than by any other disease of the respiratory organs. The effects of this complication are, indeed, similar to those above described as produced by bronchitis, except that pneumonia is a more severe complaint, and that the rash, therefore, retrocedes more rapidly. When the fever accompanying this affection first sets in, however, the intensity of the efflorescence becomes for a time greater than before; but as the inflammatory symptoms increase the eruption quickly fades, so that very soon no trace of it is to be seen. It was this fact which gave rise to the erroneous belief that the efflorescence in these cases undergoes "repercussion" (Zurücktreten) or "metastasis." I have, however, already shown, when describing the anæmiæ of the skin, that the disappearance of the rash under these circumstances is in reality to be ascribed to the bloodless condition of the cutis, and not to any metastasis of a morbid product deposited in the cutaneous tissues. In cases of little severity the maculæ may either become the seat of pigmentary deposit, or simply remain in the same state in which the pneumonia found them.

(7) *Tussis convulsiva, seu Pertussis.*—This affection often occurs as a complication of morbilli, and it is still more frequently observed to follow epidemics of that disease. Indeed, these two complaints are so closely related to one another, that cases of whooping-cough present themselves in every great epidemic of measles, either preceding the exanthem or arising during its course. This peculiar affinity seems to be due to the fact that the mucous membrane of the respiratory organs is the seat of each of these diseases (dass beide Krankheiten im System der Schleimhaut der Respirationsorgane ihren Sitz haben).

Whether, in any particular case, whooping-cough shall be suspended by an attack of measles or shall co-exist with this exanthem, depends on the extent to which the air-passages are involved. If no severe bronchitis or lobular pneumonia is associated with the pertussis, its course will be arrested by the eruptive fever, and it will remain latent till this subsides. But if these inflammatory affections are present, the supervention of morbilli will in no way interfere with the whooping-cough. Hence, in its early stages, or even when it has reached its greatest intensity, this affection is very often interrupted or removed by measles. But during the later periods of whooping-cough, when fever is present, such a thing rarely occurs; the two diseases then go on simultaneously. These facts were often observed during the epidemics of morbilli which occurred at Vienna in 1846 and 1848.

B. The complications belonging to the second group are affections of the organism in general, due to morbid conditions of the blood or of some of the solid tissues. They are the following:—

(1) *Scorbutus.*—This is one of the less dangerous complications of morbilli, particularly when the nutrition of the body is not impaired. The morbid state of the gums and the hæmorrhagic spots in the

skin (*Spilosis scorbutica*) are the symptoms of scurvy most commonly observed in cases of measles, hæmoptysis being more rarely present. The petechiæ may either occupy the same spots as the morbillous rash, or affect likewise the intervening spaces. They last three or four days, and disappear at the same time as the pigmented maculæ of the exanthem. It is certainly natural to fear that cases of this kind should have a fatal issue; but such a termination is nevertheless seldom observed in comparison with its frequency in the hæmorrhagic form of smallpox.

(2) *Gangrene.*—Various parts of the body may be attacked by gangrene as a result of measles. Affections of this kind, however, generally arise when the fever has subsided; and even if they are associated with some complaint developed during the febrile stage of the disease, they do not in any way modify the exanthem, and therefore are in reality *sequelæ* of measles, under which head I shall again mention them. The only form of gangrene which is, properly speaking, a *complication* of morbilli, is that which affects the lungs. Happily, however, this is of very rare occurrence, appearing chiefly in overcrowded localities, and only when other gangrenous diseases are prevalent.

(3) *Dissolution of the Blood.*—(Morbillöse Blutdissolution, Nervöse Morbillen, Morbillentyphus.)—The term "Morbillentyphus" was a correct one so long as a state of stupefaction was regarded as the main symptom of typhus, according to the etymology of the word. But now that the characters of typhus are better known, and that post-mortem appearances of a different kind have been associated with it, the expression Morbillentyphus is no longer admissible. Hence I prefer to speak of the condition with which we are now concerned as a "dissolution of the blood;" a name which is also applicable to the similar affections observed in the course of the other exanthemata.

The following symptoms accompany this morbid state of the blood in cases of measles:—There is severe depression from the very commencement of the disease. The fever is continuous, and increases day by day. The pulse is at first hard, but soon becomes compressible, and the artery has then an empty feel. The skin is sometimes hot and dry, sometimes cool and covered with profuse perspiration. There is intense thirst. The general muscular weakness and depression of the nervous system are extreme, and no local disease can be discovered to which these symptoms could be attributed. The patient is apathetic, and is sometimes drowsy, sometimes delirious. The mucous membrane of the mouth is of a dirty-red colour; the tongue dry, and covered with a white fur; the lips also are dry, and are often loaded with black sordes. The abdomen is distended and in a state of meteorismus, and tender on pressure; but there is not more pain in the right hypochondrium than in other regions.

In these cases the morbillous rash does not present the usual red colour, but is bluish, and soon fades, generally leaving behind it a deposit of reddish-brown pigment.

This form of measles takes a rapid course, and is seldom prolonged beyond a week. These cases rarely terminate in convalescence, and only after a protracted illness.

It much more often happens that these cases end fatally, and become the subject of post-mortem examinations. The blood is then sometimes found to be fluid, and of a cherry-red or brownish-red colour; while in other instances it is viscid and tarry. It is accumulated in the internal organs, such as the brain, the lower lobes of the lungs, and the heart, spleen, and liver. All the viscera are remarkably soft and flacid. There is, moreover, in some cases, enlargement of the spleen; and the mesenteric glands also are sometimes infiltrated, as in typhus (enteric) fever.

(4) *Acute Tuberculosis.*—This most commonly takes the form of miliary tubercle, and is incontestably one of the worst complications of measles. It appears especially in certain epidemics, and was, for instance, observed with great frequency in that which prevailed in Vienna in January, 1853.

The symptoms of tuberculosis arising during an attack of morbilli are, in children, almost exclusively those of acute hydrocephalus. The onset of this affection is generally sudden, and its course is violent and very rapid, terminating within a week or a fortnight. The invasion of this disease often interrupts the development of the exanthem, or checks its subsequent progress and soon causes it to entirely disappear. A few erythematous maculæ sometimes show themselves in the place of the morbillous rash.

In these cases the recent granulations are found most frequently in the pia mater and arachnoid, the lungs, and the peritoneum covering the spleen and liver. But as these deposits are always associated with the presence of tuberculous matter of older date, it appears probable that the exanthem does not generate the tuberculosis *de novo*, but merely calls it into active existence.

Diagnosis of Morbilli.

There are certain diseases which, in some cases, at any rate in particular stages of their course, resemble measles so closely that they may be mistaken for it. These are smallpox, scarlatina, miliaria rubra, and roseola.

The most common error of diagnosis, and the one most easily committed, is between morbilli and variola. Each of these complaints is, in fact, attended with catarrhal symptoms, though not usually in the same degree of intensity. In each of them, again, the rash appears first upon the face in the form of minute red points, distinct from one another, and spreads to other parts of the body in the anatomical order. It is, therefore, easy to understand that on the third or fourth day of the disease (reckoned from the beginning of the febrile symptoms) it may often be impossible to determine positively whether or not a case is one of measles.

Under these circumstances, no conclusive evidence is to be obtained as to the nature of the complaint, and therefore the diagnosis must remain uncertain till the question is decided by the progressive development of the papules into vesicles (if it be variola), or by the rash remaining in the form of maculæ or papules (if it be morbilli).

The differential diagnosis of measles from *Scarlatina* and *Miliaria rubra* will be given in the description of those affections.

As for *roseola*, there is no difference between it and the smooth variety of morbilli so far as the form and colour of the maculæ are concerned. Nevertheless, the only cases in which there is a difficulty in distinguishing between these affections are those which occur in newly born infants, of roseola covering the whole surface of the body. And, even then, there are sufficient grounds for making a diagnosis. For the catarrhal symptoms of measles are absent; no fever precedes or accompanies the rash, nor does this occupy any definite locality, nor spread in regular order from the face over the rest of the body. Lastly, roseola presents no contagious properties, and does not occur epidemically.

Pathological Anatomy of Measles.

Among the pathological changes produced by this disease must be mentioned, in the first place, a catarrhal inflammation of the mucous membrane of the respiratory tract; an inflammation which, however, does not differ in its results from ordinary catarrhal affections. The nasal mucus secreted in these cases is at first transparent, afterwards opaque. It always presents an alkaline, never an acid reaction.

It remains for future researches in pathological chemistry to show in what way the circulating fluid is altered by morbilli. In most fatal cases the blood is found after death to be of a bluish or brownish-red colour, and is seldom completely coagulated. It is sometimes thick and tarry, sometimes thin, and of a cherry-red tint.

The efflorescence consists essentially in the pouring out of exudation round the mouths of the hair-sacs. These consequently become raised above the level of the skin, forming minute papules, or even vesicles, if the apertures of the canals should happen to be closed. At the same time, there is a superficial injection of the surrounding part of the integument; but this, being generally limited by the cutaneous furrows, does not present the appearance of an inflammatory halo. The larger maculæ are formed by the coalescence of smaller ones. G. Simon states, as the result of his investigations, that the epidermis is still in immediate contact with the corium, but is slightly swollen at those points where papules exist. This observer found no change in the hair-sacs or sebaceous glands, nor even in the cutaneous papillæ.

Sequelæ of Measles.

Under this head I include those complaints which, *though resulting from the disease, nevertheless arise after its termination, and continue as independent affections;* so that they are caused by the exanthem, and yet cannot be said to modify in any way its development or its course. I do not regard as *sequelæ* of morbilli disorders which are merely accidentally associated with it.

These complaints are to be regarded as the effects of conditions which existed before the outbreak of the measles. Such are various morbid states of the body, and particularly tuberculosis, scrofulosis, rachitis, and chlorosis; and also other circumstances prejudicial to the health of the patient, such as his having suffered from certain diseases, or living in a damp house, or (in the case of children) having been neglected or fed improperly. The exanthem itself is often accused of producing these sequelæ; but although this may be true of local diseases, it is, according to my experience, never so of those which affect the body generally. For, whatever treatment may have been adopted, and even if the complaint has been allowed to run its course without interference, I have never seen it give rise to any consecutive affection the germs of which did not exist before the patient was attacked by the morbilli.

The following are the principal sequelæ of measles:

(1) *Ozæna catarrhalis.*—This appears not only in children evidently scrofulous at the time of the attack of morbilli, but also in those who had for years presented no sign of such a morbid tendency.

(2) *Chronic Ophthalmia.*—This complaint sometimes takes the form of a pustular affection, and sometimes appears as an inflammation of the Meibomian glands (*eczema,* seu *achor ciliorum*). The latter is a very obstinate complaint, and during winter is frequently observed after measles, affecting principally poor people who dwell in close, damp houses.

(3) *Chronic Inflammation of the Larynx, Trachea, and Bronchial Tubes.*

(4) *Lobular Pneumonia.*—This is the most common of all the sequelæ of morbilli, being met with in every epidemic of this disease.

As I mentioned when speaking of the complications of this exanthem, lobular pneumonia is often present at the time when the rash first breaks out; but even in this case it is always prolonged far beyond the ordinary duration of morbilli. In some cases, on the other hand, it sets in towards the end of the attack, or even some weeks later still. This sequela is observed principally in children who are between two and six years old, and affected with some scrofulous or tubercular complaint.

Chronic Tuberculosis.—During epidemics of morbilli, we have only too frequent occasion to observe that this exanthem is often followed by chronic tubercular disease of the lungs; and we know that this is especially liable to occur in the case of persons who had suffered from some scrofulous affection before they were attacked by the measles, or in whom the lymphatic glands, or the lungs themselves, were already the seat of scattered tubercular deposits (tuberculöse, phthisische Anlage), even though these may have given rise to no marked symptoms.

In the present state of our knowledge, therefore, it does not seem likely that it is the exanthem which in these cases first sows the seeds of pulmonary phthisis. It is much more probable that bronchitis or pneumonia sometimes, when protracted, leads to the deposition of tubercular matter, and that in other instances phthisical affections, hitherto latent, become aggravated by subsequent attacks of bronchitis, so that new deposits of gray granulations take place, and set up a progressive form of chronic pulmonary disease. Thus it is rare for measles to pass directly into phthisis by the transformation into tubercle of pneumonic exudation recently deposited in the pulmonary tissue. In the majority of cases the exanthem merely gives rise to an inflammatory affection of the lungs, and thus calls into activity germs which were present before, although they produced no symptoms. There is no peculiarity whatever in the course of the tubercular diseases consecutive to measles, nor in their post-mortem appearances.

(6) *Diphtheritic Affections* of the mucous membrane of the mouth, or, in young girls, of the *labia pudenda*.

(7) *Gangrene.*—This is, fortunately, one of the rarer sequelæ of measles. It may attack the walls of the buccal cavity, the female genital organs, or even, though less frequently, other parts of the body. These affections sometimes commence during the *stadium floritionis*, but more frequently not till desquamation is going on. Experience teaches that their occurrence is favoured by the presence of certain local affections, or of any of the complications of the original disease.

Next to the mouth and female genital organs, the parts of the body most liable to be attacked by gangrene after measles are the following: the external auditory passage, in cases in which an *otorrhœa eczematosa* has existed; the pinna of the ear, if eczematous excoriations were previously present; the alæ nasi, in scrofulous children. But it may arise at any spot affected with ulceration, or with some cutaneous disease.

These various forms of gangrene, however, are by no means so closely connected with the exanthem as the two varieties first mentioned.

These, then, are the most common of the complaints which, following measles, stand in a causal relation to that disease. These sequelæ differ essentially from those which merely occur accidentally after the exanthem has run its course (as, for instance, ague, dropsies, and neuralgic complaints), or which arise from a subsequent infection by some other contagious disorder, such as typhus, scarlatina, or smallpox.

Prognosis of Measles.

The course and termination of this disease vary greatly, according as it is simple or attended with complications and sequelæ.

In general, it may be said that epidemics of morbilli are of a less malignant character than those of scarlet fever or variola.

The course taken by any individual case of measles depends in part upon the nature of the epidemic, in part upon the previous state of the patient's health.

The following are the conditions which, as a rule, justify us in hoping that a case of morbilli will terminate favorably:—The fever should be moderate, except during the evening exacerbations; the pulse not exceeding 120 beats in the minute, and the temperature being below 100° F.: moreover, both temperature and pulse should begin to fall as soon as the rash is fully out, and should afterwards decline steadily. The skin ought to be moist; there should be no disproportion between the amount of fever and the degree of muscular debility; the breathing, even if quickened, should yet be deep, and should give rise to no particular pain; the cough should be slight and loose, and should subside as soon as the efflorescence disappears. This, again, should be of the usual colour and of normal duration, lasting not more than three days. Lastly, a good prognosis is to be given only when the patient is not very young, being, at any rate, more than one year old.

The symptoms which are to be looked on as unfavorable are the following:—Great weakness or excitement when the fever first sets in; the skin dry and hot; the pulse hard and very rapid; the respiration laboured, much quickened, and attended with a short cough. It is also a bad sign when the rash fades, or becomes of a different colour, or disappears before the proper time; or, on the other hand, when it remains longer than usual. This disease is most fatal in persons who are ill nourished, and in those who are rachitic, tuberculous or scrofulous, and particularly in children less than a year old.

There are also certain special symptoms which should lead us to prognosticate an unfavorable termination. Among these are the following: viz., profuse epistaxis; croup, but only when it appears between the fifth and the seventh day of the disease, when the rash is fully out—for this complication is generally free from danger when it occurs at the commencement of an attack of measles; tracheitis or bronchitis, if intense, and principally in rachitic children; pneumonia, whether lobar or lobular, especially in young subjects; and, lastly, scorbutus, which generally adds greatly to the duration of the disease. A fatal termination occurs in almost every case complicated with gangrene, tuberculosis, or the so-called morbillous dissolution of the blood.

Among the sequelæ, the chronic forms of ophthalmia, tracheitis, and bronchitis are remarkable, particularly in scrofulous subjects, for their obstinacy and their tendency to relapse.

Etiology of Measles.

It is not in our power to produce the contagious principle of morbilli in a visible or tangible form; but experience has repeatedly shown that a single case may infect whole families, and even districts; and this surely is sufficient to refute the opinion of those who ascribe measles to an atmospheric or telluric influence of an unknown kind. To prove that this disease is contagious, I have no need to refer to the epidemics which have raged in remote islands, where it has been most fatal to the natives, although occurring only when introduced by strangers. In our own country, and under the conditions in which we ourselves live, we have abundant opportunities of observing instances in which a perfect pestilence has been generated by the presence of morbilli in one member of a family, or by the admission of a single case of it among the patients in an infirmary or a workhouse, or, above all, an hospital for children.

The secretions of the respiratory mucous membrane appear to be the ordinary vehicle of the infectious principle of measles. But that the blood also may convey it has been shown by the experiments of existence of some other disease (whether cholera, typhus, variola, scarlatina, or an inflammation of the brain, intestinal canal, or one of the serous membranes) prevent the patient catching measles. The rash, however, does not come out so long as any one of these complaints is present, but appears only when it has subsided. Hence this exanthem is frequently observed in the course of convalescence from some other acute disease, when the patient during his first illness had been in contact with persons suffering from morbilli.

Children affected with any chronic complaint, particularly if it be of a scrofulous nature, are very susceptible of the contagion of measles. This is especially the case with those who suffer from some disease of the respiratory mucous membrane, such as pertussis, bronchitis, or tuberculosis: on the other hand, an unusual power of resisting infection belongs to children affected with epilepsy, chorea, or paralysis.

The susceptibility of morbilli is, as a rule, exhausted by a single attack of the disease. But in exceptional cases, when this exanthem is epidemic, we find adults affected with it for the second time, having already passed through it during childhood. In fact, the degree of immunity after measles is probably much the same as after smallpox.

A change of residence, or of the accustomed conditions of life, may afford fresh opportunities of catching this complaint, or indeed any other of the acute exanthemata.

We are not as yet acquainted with any means of removing the susceptibility of measles, even for a time, or while the disease is epidemic. Camphor and sulphur have been vaunted as prophylactics; but experiments made with them have yielded negative results. There is no great advantage in transferring morbilli directly from one individual to another, in the way described above, for this simply reproduces the original complaint without any diminution in its intensity; nor does this procedure at all lessen the probability of the occurrence of complications or sequelæ.

I have still a few remarks to make with reference to the prevalence of this disease in an epidemic form.

According to my present experience, minor epidemics of measles occur about every three or four years; more severe ones, at intervals of eight or ten years. They may present themselves at any season, but are more common during autumn and winter than during spring and summer. They attack the inhabitants of populous towns more severely than the rural population.

There is a definite relation between the severity of the onset of an epidemic of morbilli and its duration, this being in general short in proportion as the epidemic was at first intense. The so-called *epidemic character* of the disease depends not upon any specific malignant or benign quality of the contagious principle, but upon a number of different circumstances, among which are the weather, the season of the year, and the nature of the other diseases which happen to be prevalent at the time, or have recently been epidemic. Thus the so-called *septic, gastric,* or *torpid* (torpide) character of certain epidemics of measles is undoubtedly to be attributed to some one or other of the conditions I have just mentioned.

Another circumstance concerned in giving a malignant character to an epidemic of this disease, is the length of time which has elapsed since it last prevailed. The more frequently epidemics occur at any particular place, the milder their course; whereas experience has shown that this exanthem assumes its most unfavorable form in regions where it had never before existed, or had, at any rate, not been observed for a long time. This is the case, for instance, in the Faröe Islands, Madeira, and St. Helena; and still more among the North American Indians.

The complaints which have been most frequently observed as precursors of an epidemic of morbilli, are inflammatory affections of the respiratory organs, influenza, and pertussis. Again, there is no disease which follows such epidemics so commonly as whooping-cough, which may thus be regarded as standing in a peculiarly close relation to measles. This exanthem is, in fact, never very generally prevalent without being associated with it, either as a precursor, a complication, or a sequela.

Epidemics of morbilli occur in hot climates as well as within the temperate zone; but in very cold regions they seem to be less common, and, accordingly, to take a more unfavorable course.

Treatment of Morbilli.

The treatment of a case of uncomplicated measles should be based upon the rule, that the natural course of the disease is not to be disturbed by medicines of which the action is uncertain.

We know of no remedy which can ensure a favorable issue to this complaint. This is, indeed, shown by comparing cases which have run their course without interference, with those treated according to the different systems of the past, or even of more recent times. Whatever plan is adopted, the result is probably much the same. It is, however, well to avoid giving diaphoretic or alterative medicines: these drugs do not in any way aid the exanthem when it runs its natural course; and they may favour the occurrence of complications, which they certainly have no power to prevent.

The physician, then, has only to regulate the external conditions under which the patient is placed, so that the complaint may go through its stages favorably. For instance, quiet must be enjoined, and while the fever lasts the temperature must be uniform; but the patient is not to be kept in bed longer than is necessary, and should be lightly covered, and not buried in pillows. Indeed, children, to whom lying in bed is peculiarly irksome, may, if well wrapped up, be carried about the room. The temperature of the sick-chamber should not be above 64° or 66° F., and fresh air should be admitted at least once daily. A very bright light may be injurious if there is severe ophthalmia, but not otherwise.

The patient may be allowed to drink cold spring water, even while fever is present. Emulsions and infusions which are heating or oppress the stomach are not to be recommended.

When the disease is mild, and has reached the second or third period of its course, the inclinations of the patient may, within certain limits, be taken as our guide in the matter of nourishment, especially in the case of children. For instance, broth and milk may be given alternately. Even while the fever continues, the skin must be kept clean. Articles of linen which have become soiled or wet should at once be removed, and replaced by clean ones, first thoroughly aired. The patient's face, or even the rest of the body, if dirty, may be washed with tepid water; and if the skin is intensely hot and dry, great relief is given to the patient by ablution with cold water, or inunction with some fatty substance.

When the fever and cough have become moderate or have altogether subsided, the patient's strength will be restored by nourishing food sooner than by tonic medicines.

After the termination of measles,—that is to say, after the fourteenth day,—convalescence is favoured by the use of tepid baths, either alone or in conjunction with cold ablutions. It was formerly the rule, and is unhappily still sometimes the practice, to confine the patient to the house for a fixed period of a month or six weeks. This, however, is not only unnecessary, but may even be injurious to a weakly person, by depriving him, for the time, of wholesome and refreshing air. Though often spoken of as a source of danger in measles, " catching cold " is in reality very seldom the cause of any ill effects. For experience shows that the offspring of poor parents pass favorably through this disease, although placed under the worst conditions and exposed to the most severe weather; while, on the other hand, children kept constantly in bed are particularly susceptible of catarrhal complaints, not only because of the increased delicacy and liability to take cold which are thus artificially produced, but also because the duration of the disease is much longer under these circumstances.

The treatment of the complications of morbilli should be directed solely and entirely against *them*. We must not allow the fact that the patient is passing through an exanthem to prevent our prescribing the appropriate remedies.

As for the sequelæ, we have always to bear in mind that these affections are often the result of scrofulosis, tuberculosis, anæmia, or the want of proper nourishment. The employment of the internal medicines indicated by the existence of one of these conditions will, however, be rendered useless in most cases by the rapidity of the course of these sequelæ; and, consequently, local applications form the most important part of the treatment.

CHAPTER VIII.

SCARLATINA—SCARLET FEVER.

(CLASS IV.—ACUTE, EXUDATIVE, CONTAGIOUS DERMATOSES.)

Febris Scarlatinosa, Angina Maligna, Angina Erysipelatosa, Rossalia, Rossania, Scharlach, Scarlachfieber, Scarlatine, &c.

On account of the scarlet colour of the rash in this disease, the name of *Scharlach* was given to it by German physicians; and this term was probably latinised by Sydenham. Earlier authors call the malady Rosalia, Rossalia, and Rossania. Whether the Greek, Roman, or Arabian writers were acquainted with it, cannot be determined from their works. Indeed, the first description of an epidemic complaint resembling our scarlatina rather than any other disease is that given by Ingrassias of Palermo and Coyttarus of Poitiers in the middle of the sixteenth century. The characteristic features of this exanthem may be recognised unmistakeably in the writings of Sennert and Döring, who saw scarlatina in an epidemic form early in the seventeenth century. Towards the end of the same century, Sydenham and Morton published the results of their observations of epidemics which had prevailed in London. Of these writers, the former admitted scarlatina to be an affection *sui generis*, while the latter, on the other hand, maintained that it is identical with morbilli. After this time the number of papers and books on this disease increased rapidly, although they contained comparatively little that was new. The writers of the natural historical school placed scarlatina among the erysipelaceæ.

The older literature of this disease was collected with industry and care by J. Frank,[1] and also by Most;[2] more modern writings upon the same subject are quoted by Canstatt;[1] and still more recent works will be found enumerated in Wunderlich's 'Handbuch der Pathologie und Therapie.'[2]

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[1] 'Grundsätze der gesammt. prakt. Heilkunde,' Leipzig, 1843, iv Theil, p. 348.

[2] 'Versuch einer kritischen Bearbeitung der Geschichte des Scharlachfiebers,' Leipzig, 1826, Band ii, p. 345.

Symptoms of Scarlatina.

Scarlatina is a general disease, manifested by a scarlet rash covering the whole surface of the body, or at least a large part of it, and attended with fever, as well as with a more or less intense inflammatory affection of the organs of deglutition. It runs an acute course, and is contagious.

Very different statements have been made by writers upon scarlatina with reference to the length of the period of incubation or latency in this disease. According to some, it may vary from three days to a month; while others limit it to six or seven days. In certain cases it has been positively proved that, as early as the fourth or fifth day after infection, the pulse has been perceptibly accelerated, and sensations of slight headache, with transient malaise and weakness, have been experienced. Very often, however, the first stage of the disease, the *stadium prodromorum*, sets in suddenly with intense fever, without having been preceded by any of these symptoms.

I. *Stadium Prodromorum.*

In reference to the number and severity of the symptoms observed during this period, no rule can be laid down which will hold good in all instances. But the observation of many cases renders it possible to give a sketch of what may be regarded approximatively as the typical form (Prototyp) of scarlatina.

Thus, *febrile symptoms* are present, as is shown by the pulse being quickened, reaching even 140 beats in the minute, and by the skin being hot and dry, its temperature being sometimes as high as 104° Fahr.

The chief *concomitant symptom* in this stage of scarlatina consists in a swollen and reddened state of the tonsils and soft palate. This inflammatory redness sometimes extends from the parts originally affected by it forwards over the tongue, and backwards to the mucous surface of the throat; but it seldom involves the Schneiderian membrane or the conjunctiva, and still more rarely the lining of the larynx and trachea. At the same time, the patient suffers from nausea, or even vomiting, and frequently is in a drowsy state. The subjective symptoms of which he complains are difficulty of swallowing, sensations of dryness and burning in the throat, feelings of weight in the head, giddiness, or even severe headache. There is also great muscular depression, and in children coma and delirium are often present. Convulsions, again, are among the more common symptoms; while the patient much less frequently complains of an ophthalmia, a severe catarrh, or a troublesome cough. This stage may last only a few hours, or as much as three days.

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[1] 'Jahresbericht,' vol. ii, pp. 101—105.

[2] Band ii, 1 Abtheil., p. 544.

II. *Stadium Eruptionis.*

The *febrile* and *concomitant symptoms* gradually become more and more intense during this period.

Exanthematic Symptoms.—The first signs of the scarlet rash are observed on the neck and the upper part of the chest; it appears in the form of minute red points, closely aggregated together, and smooth, so that the part looks as if uniformly reddened. The face generally remains free from this efflorescence, excepting, indeed, that it is slightly congested, and that the fever causes an increase in the turgidity of the skin and in the rosy hue of the cheeks. Neither in this nor in any subsequent stage of the exanthem does the face generally present the true scarlatinal eruption.

When it first makes its appearance, this rash has not a very decided scarlet colour; it is sometimes of a pale, rose-red tint, differing in no respect from that of an ordinary erythema, which, particularly in children, is often accompanied with fever. From the symptoms as yet present, it is, in fact, impossible to determine with certainty the nature of the complaint. One can at most, when this exanthem happens to be epidemic, conjecture from the general aspect of the case that it is one of scarlatina.

III. *Stadium Floritionis.*

During the early part of this stage, both the *febrile* and the *concomitant symptoms* continue to increase in intensity.

Exanthematic Symptoms.—The rash above described as being confined to the neck and chest, now gradually extends over the arms and forearms, and also over the back, loins, and lower limbs; in fact, it spreads uniformly over every part of the body, but displays a special predilection for the hands and feet. It is now, for the first time, possible to diagnose positively the nature of the disease.

The efflorescence of scarlatina presents various shades of colour, from a pale rose red to a dark scarlet. It disappears beneath the pressure of the finger, but returns instantly as soon as this is removed; its reappearance proceeding either from the centre to the periphery, or in the reverse direction, according to the kind of pressure employed and the spot to which it is appplied.

The length of time during which the rash remains visible may vary from a single day to a week; but, as a rule, it lasts three days. Thus, the acme of scarlatina is generally reached on the second day of the efflorescence; after which, in cases in which the disease takes its normal course, the pulse becomes less rapid, and the other concomitant symptoms decline. The lining membrane of the mouth, however, still remains universally reddened; and so does the surface of the tongue, unless it is covered with a white fur; for, in that case, the deep-red colour and the enlargement of the papillæ are to be seen only at the apex and on the sides of the organ. In some instances the patient again suffers, at this period of the disease, from pain during deglutition, and the saliva is again secreted in increased quantity. The urine is scanty, and there is generally constipation of the bowels.

The subjective symptoms complained of by the patient consist in a pricking, or itching, or, sometimes, even a burning, sensation in the skin. I have never been able to recognise in this disease any characteristic smell, although Heim states that he can detect an odour resembling that of mouldy cheese, or of the dens of beasts of prey.

When the efflorescence begins to disappear, the order of succession in which it fades from the different regions of the body is the same as that which it observed when making its appearance. At the end of two or three days all the parts affected present a brownish colour, due to pigmentation, and of an intensity proportionate to that of the scarlet rash which preceded it. Within the same period the temperature of the skin and the frequency of the pulse again become normal, and the inflammatory state of the mucous membrane of the mouth and throat gradually subsides. The alvine evacuations frequently become more fluid, and also more abundant. The urine, too, increases in quantity; and traces of albumen, as well as numerous epithelial cells, may often, even at this stage of the disease, be found in it, although they are sometimes present for only a very short time. The ordinary duration of the *stadium floritionis*, up to the commencement of desquamation, is about six days.

IV. *Stadium Desquamationis.*

During this period both the *febrile* and the *concomitant symptoms* continue steadily to decline.

The only *exanthematic symptom* is the desquamation. This begins on the neck, the part at which the rash first appears, and at which it also commences to fade. The epidermis of this part generally peels off in the form of fine lamellæ, so that parts of skin of greater or less extent, although healthy, are observed to be surrounded by a white border. According to the intensity of the previous efflorescence, the mode of desquamation is different. Thus, the cuticle sometimes separates in large plates, and even (from the fingers, for example) as a complete membranous glove (*Desquamatio membranacea*); while, in other instances, it forms small branny scales (*Desquamatio furfuracea*). The former variety is generally observed on the hands, feet, forearms, and legs; the latter occurring on the other parts of the body. Wittering and Most have asserted, that in some cases of scarlatina they have seen the hair and the nails cast off. However slight the desquamation may be, traces of it are always to be detected upon the chest and the sides of the neck. It lasts, on an average, about fourteen days; but on the fingers, palms, and soles, it requires a longer time for its completion than on other parts of the body.

According to this description, then, the whole course of scarlatina, from the beginning of the *stadium prodromorum* to the end of the period of desquamation, occupies from two to five weeks.

Varieties of Scarlatina.

The sketch I have just given of this exanthem is applicable to that form of it which preponderates among sporadic cases and in the milder epidemics. But in some instances the disease deviates altogether from this normal type; and this is observed far more frequently in scarlatina than in either measles or smallpox. Scarlatina then is, both in its symptoms and in its course, the most irregular of the three contagious eruptive fevers, so that it is in fact impossible to mention all the varieties which present themselves in practice. I shall therefore content myself with describing the most important of the modifications of this exanthem, passing over those which are of less consequence.

1. *Prolongation of the period of Latency.*

According to my own observations, the interval between the occurrence of infection and the outbreak of the disease is, in some cases, as long as a fortnight. MM. Rilliet and Barthez, indeed, assert that still longer periods, such as a month or even forty days, may elapse after exposure to contagion. Upon this point, however, I would not venture to give a positive opinion. A prolongation of the stage of incubation is observed chiefly in children already in bad health, affected with rickets, or suffering from some one of the various neuroses.

2. *Irregular Development of the Rash.*

The efflorescence in some cases appears suddenly, no previous symptoms having existed, and the fever and inflammation of the throat arising subsequently. It is, however, necessary to bear in mind that the tonsillitis and other affections generally observed during the *stadium prodromorum* are often, when present, very slight, so that they may easily be overlooked. In fact, careful observation teaches that it is only in very rare instances that redness of the mucous membrane of the throat is altogether wanting.

Another variety consists in the rash breaking out in an irregular way. Thus, it sometimes appears on regions of the body which are kept warm, such as the loins, back, abdomen, elbows and knees, earlier than on the neck or chest. Like the other exanthemata, too, scarlatina affects first, and with most intensity, parts which have been previously exposed to pressure or friction (*Erythema traumaticum*). Hence, if we would avoid mistakes, we must not overlook the fact that an eruption may possibly belong to this disease, even though it is for a time quite local.

Sometimes, again, the scarlatinal efflorescence breaks out suddenly over the whole cutaneous surface, instead of appearing in succession at different parts of the body. This is a rare occurrence in sporadic cases, being observed chiefly when a severe epidemic is commencing or is at its height.

Further, the eruption is in some instances imperfectly developed, so as to consist merely of isolated patches, each as large as the palm of the hand, or larger, scattered over various parts of the body, the skin between being sometimes quite healthy, sometimes (but only during the exacerbations of fever) covered with a fugitive rash. On the surface of paralysed limbs, the scarlatinal efflorescence is often altogether wanting. In some cases, lastly, this rash has been confined to one lateral half of the body.

3. *Irregularities in the duration or intensity of the Efflorescence.*

The rash of scarlatina appears to be occasionally so evanescent as to remain visible for a few hours only. The case would then be regarded as one of a simple erythema, did not the presence of concomitant symptoms, or the protracted course of the complaint, taken together with the prevailing epidemic constitution, enable a correct diagnosis to be made.

Sometimes, again, we observe the exact opposite of this, the *stadium floritionis* being prolonged, so that the rash remains out for a week, or even, in exceptional instances, for several weeks. When this is the case, however, it does not present the usual scarlet colour, but acquires a livid tint, and ends in a deposit of very dark brown pigment.

In another variety which is now and then met with, the efflorescence is unusually intense, the whole surface of the body appearing as if suffused with blood. Again, it is sometimes so pale that a careful examination is necessary for the detection of the slight punctated redness.

Lastly, there are some cases in which the rash successively vanishes and reappears. These alternations, which occur at intervals of variable length, depend sometimes upon changes in the amount of fever present, sometimes upon the presence of internal diseases as complications of the exanthem.

4. *Irregularities in the process of Desquamation.*

In some cases of scarlatina, the commencement of desquamation is retarded; in other instances,—and chiefly when oily or fatty matters have been repeatedly rubbed into the skin,—its duration is much longer than usual. A desquamation excessive in degree is, as a rule, the result of a very intense rash, while one which is unusually scanty is generally the sequel of a no less slight efflorescence.

5. *The "Scarlatina sine Exanthemate."*

The use of this expression can be justified only in such cases as the following:—Several persons, residing in the same locality, and exposed to similar epidemic influences, fall ill at the same time: some of them present, in a well-marked form, all the symptoms of scarlatina; others suffer merely from fever and an affection of the throat, there being in these patients no efflorescence, nor, at a later period, any desquamation.

6. *Irregularities in the form of the Rash.*

The following varieties of the scarlatinal eruption may be recognised:

(1) *Scarlatina lævis.*—The smooth, simple efflorescence—the most common form, upon which I have based the description given above.

(2) *Scarlatina lævigata.*—Canstatt has applied this name to a more intense variety of the disease, characterised by the shining appearance of the rash, and by the mucous surfaces being affected in a more marked degree.

(3) *Scarlatina papulosa.*—In this form, which is, however, rarely met with, small papules of a dark red colour, which give a rough feel to the skin, and are due to an unusual degree of swelling of the mouths of the hair-sacs, arise on the reddened surface of the parts affected. In some cases such papules are observed as long as twelve

or eighteen hours before the ordinary scarlatinal rash makes its appearance.

(4) *Scarlatina miliaris* (Scharlachfriesel).—This variety—one less rare than that just described—is characterised by the formation of white vesicles seated on a red base, and filled with a transparent fluid. They often cover large tracts of the cutaneous surface, but are observed principally on the trunk of the body. In some cases of scarlatina, however, we find groups of similar vesicles on the inner surfaces of the arms and thighs, as well as on the neck, back, chest, and abdomen. This is the so-called *Miliaria alba*.

(5) *Scarlatina variegata* (Der gefleckte Scharlach, Rubeola scarlatinosa).—In this form of the disease the red points, from which the efflorescence normally developes itself, enlarge so as to form defined maculæ, as big as lentils or beans, and of an intense red colour. These spots are found in large numbers on the limbs and trunk. Every part of the surface is, in these cases, covered with a continuous and uniform, but paler, rash; and the intervals between the darker maculæ are, consequently, never of the colour of healthy skin. After a short time these darker spots sometimes coalesce, and so again produce a continuous eruption of a very deep hue. In other instances, however, they undergo no such change, but, throughout the whole course of the complaint, present the same appearance as when they were first formed.

(6) *Scarlatina hæmorrhagica seu septica.*—Instead of the minute dotted efflorescence, readily disappearing beneath the pressure of the finger, there are seen, in this form of scarlatina, reddish-brown points, placed close to one another, and surrounded by a diffused rash of a paler colour. These spots arise from hæmorrhage, and are unaffected by pressure, which obliterates only the scarlatinal eruption between them. After a time they coalesce in places, the rash which surrounds them acquires a bluish appearance, and thus are formed sharply defined patches, each as large as a half-crown, or even as the palm of the hand.

In children this variety of the scarlatinal efflorescence is often observed over a large part of the surface; but in adults it is confined to the neck, the upper part of the chest, the back, and the skin over the joints of the upper and lower limbs. When the rash presents this hæmorrhagic form, the tonsils and gums are generally of an abnormally dark colour.

7. *Modifications of Scarlatina, due to its being combined with other cutaneous affections.*

According to the conception which we form of a morbid process arising from a specific alteration in the blood, it cannot be admitted that scarlatina ever coexists with smallpox or measles in the same patient; and therefore the cases of this kind related by certain writers must be referred either to the *Scarlatina variegata,* or to the form of smallpox in which the eruption is preceded by an erythema. Indeed, observation shows that when an individual is attacked by two of these diseases in succession, either the progress of the first is checked, or the second fails to be developed. With reference to this point Noirot says—"When scarlatina and measles coexist, the former generally prevails; the latter (like smallpox under the same circumstances) being, as a rule, suspended for a time, but subsequently going through its regular course." In wards in which patients affected with the different exanthemata lie side by side, persons suffering from measles or smallpox are often attacked by scarlatina; but when this happens the scarlatinal rash does not break out till the previous eruption has either passed into the stage of desquamation, or even altogether disappeared. It is, indeed, stated that the course of variola or morbilli may be suspended by an attack of scarlatina, and renewed when it subsides; but this I have never myself had occasion to observe.

In some cases, besides the ordinary scarlatinal efflorescence, there appear a few urticarious wheals, or even bullæ or pustules in small numbers. These have been sometimes set down as a pemphigus and an impetigo respectively; but this is not correct, for they quickly disappear, and are not succeeded by any fresh eruption of a similar character.

As I have already stated, *Purpura* is observed in combination with the scarlatinal rash in the hæmorrhagic or septic variety of this exanthem. Moreover, in certain cases, it presents itself during the *stadium floritionis* as an *isolated* symptom; and this form of it does not essentially modify the course of the disease.

Chronic eruptions, such as eczema, psoriasis, prurigo, or even severe scabies, do not prevent the occurrence of scarlatina. While this exanthem is present, however, they recede into the background, but return with fresh intensity as soon as it has completed its course.

When scarlatina is combined with other febrile diseases, these, as is well known, display an unusual severity. Certain writers have stated that this exanthem is often associated with typhus and with the puerperal state, and have even made use of the expressions "*Scarlatina typhosa* and *S. puerperalis*." This name, however, is altogether inappropriate, for the rashes observed under these conditions have nothing in common with scarlatina except their colour, and are, therefore, to be regarded as mere erythemata.

8. *Complications of Scarlatina.*

Certain of the affections which I have already mentioned, as preceding or accompanying the simple form of scarlatina, not infrequently pass into independent diseases. This has the effect of pushing into the background the cutaneous eruption, and causing it to undergo essential changes in character, or even to disappear altogether. In fact, the general aspect of the case is more or less completely altered; and this has given rise to the erroneous notion that these complications of scarlatina are *caused* by a retrocession of the efflorescence.

When speaking of measles I showed that the mucous membrane of the air-passages is the most frequent seat of the secondary affections which are apt to make their appearance during the course of that exanthem. On the other hand, the structures generally first attacked in the complications of scarlatina are the tonsils, the arches of the soft palate, and the base of the tongue; and the morbid action afterwards extends by continuity of surface to the larynx, œsophagus, fauces, or nasal cavities, and at the same time involves the parts subjacent to those originally affected, such as the parotid and submaxillary glands, and the surrounding connective tissue. Thus we have—

1. *Parenchymatous Inflammation of the Tonsils* (Angina scarlatinosa maligna).—This, the more severe form of scarlatinal angina, consists in an inflammation of the glandular structure of the tonsils and of the adjacent areolar tissue. It may either precede or accompany the first appearance of the rash, or even (which is less common) arise during the *stadium floritionis*: it generally terminates in either suppuration or gangrene. When these results have begun to manifest themselves, but not before, the efflorescence commences to fade,

or becomes reduced to a few patches of the size of the palm of the hand, assumes a livid colour, and no longer disappears beneath the pressure of the finger.

II. *Diphtheritis of the Tonsils and adjacent parts* (Angina diphtheritica seu crouposa).—This is observed chiefly in certain epidemics of scarlatina; it affects adults as well as children, and is not confined to those actually suffering from the disease, but attacks even persons who have merely been brought into contact with patients ill with it.

The presence of diphtheritis has no tendency to "drive in" the scarlatinal rash, which, in these cases, is often abundant and intense, and is accompanied by great heat of skin. Should, however, the efflorescence suddenly fade, or the surface assume a livid appearance, while the temperature at the same time falls, an unfavorable prognosis must be given, for these symptoms point to the existence of some general disease which is already far advanced.

III. *Inflammation of the Areolar Tissue of the Neck, and of the Submaxillary Glands.*—This complication of scarlatina must not be confounded with the similar disease which accompanies and is caused by a tonsillitis; it is rather to be compared with the metastatic affections observed in typhoid fever. It makes its appearance during the *stadium floritionis* of the exanthem, or soon after the end of this period, and sometimes terminates in resolution, but more frequently in suppuration, or even, in certain cases, in gangrene.

The liability to this affection is by no means confined to those individuals who suffered from disease of the glands before being attacked by the scarlatina. It occurs also in those who were previously to all appearance perfectly healthy: I have, however, frequently seen it in the children of syphilitic parents. This complication cannot be said to modify to any extent the scarlatinal rash. Even when suppuration or gangrene sets in, the efflorescence still remains visible, but acquires, in patches, a livid colour.

IV. *Inflammations of the Serous Membranes.*—These affections, as complications of scarlatina, are rare in comparison with those of which I have hitherto been speaking; hence we may infer that they arise from something special to the individual patient, rather than from any general condition. They are observed in adults more commonly than in children. The slightest form in which they occur is as rheumatic affections of the joints. This acute articular rheumatism is generally of short duration, and of little intensity; but it should not be disregarded, for it often precedes or accompanies some more severe disease, such as meningitis, pleuritis, pericarditis, or peritonitis.

When, during the course of a scarlatina, a large quantity of effusion is rapidly poured into one of the serous cavities, the rash disappears; but if the exudation occurs at intervals, and not all at once, the efflorescence generally returns for a short time with each fresh exacerbation of fever.

v. *Pneumonia of a Croupous character.*—This affection, either in the lobar or lobular form, is often associated with other complications of scarlatina, such as gangrene, pleuritis, &c.; and in some cases, though less frequently than in measles, it is itself the predominant disease. It then arises by the extension downwards of a croupous bronchitis, and may, therefore, be correctly termed a *broncho-pneumonia.*

This complaint does not constantly produce any change in the scarlatinal efflorescence; nor does it, generally speaking, lengthen to any great extent either the *stadium floritionis* or the *stadium desquamationis*. In some few cases, however, the latter period is prolonged by the occurrence of this complication.

vii. *Inflammation of the Intestinal Mucous Membrane.*—This affection generally sets in when the exanthem is fully developed. It is more often of a catarrhal than of a croupous character, and gives rise to diarrhœa, accompanied with dysenteric symptoms.

viii. The following diseases also require to be mentioned as being among the more rare complications of scarlatina:—Sloughing of the cornea (Keratomalacie); ozæna (Rhinorrhagie); stomatitis vesiculosa seu aphthosa; pulmonary apoplexy; and gangrene. This last follows the application of blisters, or affects parts previously diseased, or the seat of bed-sores.

It is only in very rare cases that any one of the complications I have been describing occurs altogether apart from others. Most frequently two or even more of them are present simultaneously.

ix. *Scarlatinal Dissolution of the Blood* (Scarlachtyphus).—It is, however, not uncommon for scarlatina to terminate fatally after running a most violent course, without our being able to make out, either during life or after death, that any particular organ or system of organs is especially diseased. Now, cases very similar to these are observed likewise in the other exanthemata and in typhus; and taking this fact into consideration, we are ready to admit the validity of the explanation which regards them as instances of a scarlatina without localisation and affecting the blood alone (eine Scarlatina ohne Localisation, ein im Blute verlaufender Scharlach), or, in other words, as the effect of a scarlatinal dissolution or decomposition of the blood.

These cases present two grades in the intensity of the symptoms with which they are accompanied. In the more severe of these two varieties, extreme muscular depression, with slight headache and a remarkably rapid pulse, are present from the very commencement of the febrile disturbance. These symptoms are followed during the *stadium eruptionis* by repeated vomiting, and afterwards by a deep stupor or delirium. The patient lies on his back, with his eyes half open, but in an unconscious state. When loudly spoken to, he seems to come to himself, and answers the questions put to him, but soon sinks back into his original posture, and becomes again unconscious. Quivering movements of the muscles of the face and of the fingers are also commonly observed in these cases, and, in children, general convulsions often occur. The pupils are moderately dilated; the lips and tongue are dry, the latter being usually of a bright red colour. As the disease goes on, mucous râles are heard in the larger bronchial tubes; the abdomen becomes distended, but there is seldom any enlargement of the spleen; the urine becomes scanty, and of a dark red colour; the pulse continually increases in frequency, reaching as much as 160 beats a minute; the features become sunken, and the extremities cold; and death generally follows very rapidly, the usual duration of this form of the disease varying from twelve hours to five days.

Under these circumstances, the scarlatinal rash may be modified in different ways. Sometimes the disease sets in so suddenly, and with such violence, that there is no time for the efflorescence even to make its appearance; and in such cases we may often be in doubt as to the cause of the patient's rapid death. Sometimes, again, the eruption comes out, but only in patches, and, after a short time, disappears; while, in other instances, it developes itself with great intensity over the whole cutaneous surface, being at first of a dark red hue, but soon becoming livid; or, lastly, it becomes reduced to a few large maculæ, which are then, in most cases, of a bluish colour.

The second grade of this affection is the "scarlatina with typhus-like course" (Scharlach mit typhusartigen Verlauf) of Löschner. A state of stupefaction and muscular weakness, and a persistently rapid pulse, without any discoverable local affection, are present in this form of the disease, although in a much slighter degree than in that above described. The patient is languid and indifferent, and, even if a child, seldom asks to be taken out of bed. During the evening exacerbations of fever, slight convulsive movements and delirium are observed; the patient tosses restlessly to and fro; the eyes are dull and half closed; the mucous membrane of the mouth and nose dry; the lips covered with black sordes; the thirst intense; the skin hot and parched. Symptoms of bronchial catarrh are present; the abdomen is tense, and on the application of forcible pressure tender; the urine is scanty, and in half the cases contains a considerable quantity of albumen. Should the disease be of long duration, a catarrhal diarrhœa comes on; there is a persistent acceleration of the pulse, which during the exacerbations reaches 160 beats per minute, but is still in due proportion to the frequency of the respiration.

In cases of this kind the scarlatinal rash, though of a paler colour than usual, generally developes itself in the regular way, and seldom disappears prematurely. It is often accompanied by petechiæ, or by miliary vesicles.

In the post-mortem appearances observed in these cases there are certain points of interest.

The first striking fact is the presence of gray granulations on the membranes of the brain. These are found more often in cases in which the disease was acute than in those in which it ran a more slow course. They are met with chiefly in children, and occur in no other disease excepting acute hydrocephalus and miliary tuberculosis.[1]

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[1] It is impossible not to be struck by the fact that the description of these "gray granulations" reads remarkably like an account of the Pacchionian bodies. Prof. Mayr speaks of them as being "of the size of poppy-seeds, and aggregated together in groups," and as "being detached with difficulty from the membranes of the brain. They are found at the summit of the hemispheres, on either side of the falx cerebri, and sometimes, in small numbers, on the lateral surfaces of the pons Varolii." The original work contains a detailed account of the post-mortem appearances in these forms of scarlatina, but this has been omitted in the translation.—[Ed.]

A second appearance, constantly observed in these cases, is a hyperæmic condition of the brain, lungs, and abdominal viscera, without any evident exudation being present.

A third point of importance is the fact that the Peyerian patches in the small intestine are enlarged and reddened, although very seldom ulcerated (excoriirt). Their condition bears a great resemblance to that found in typhoid fever.

Lastly, it is remarkable that a very considerable quantity of serum is in these cases contained in the large serous cavities.

Sequelæ of Scarlatina.

Under this head I propose to speak of those affections which manifest themselves by special symptoms only when the primary disease has already run its course, but which nevertheless are clearly developed out of, and generated by, the scarlatinal process.

Their effect on the scarlatina is not to *complicate* it, but to *prolong* it; and although their origin may often be traced back as far as the commencement of the exanthem, yet it is not till after the end of the *stadium floritionis* that they step into the foreground as independent affections.

I shall not regard these sequelæ as produced by the deposition of a scarlatinal poison which had been retained in the blood, and had not been duly excreted. In my opinion, neither the scarlatinal rash nor the subsequent desquamation has for its object to remove from the body morbid matters of any kind whatever, or in any way to purify the system. I look on them both as mere symptoms of the general disease to which they belong.

For, in truth, sequelæ arise quite as often in cases in which the eruption ran its regular course, was fully developed, and lasted the due time, as under the opposite circumstances. A sudden interruption in the course of a scarlatina and a disappearance of the rash are, as I have already several times stated, generally the effect of the presence of some *complication* of this exanthem.

Among the principal causes which dispose to the production of sequelæ in this disease, must be mentioned pre-existing scrofulosis, rachitis, anæmia, syphilis, or scorbutus. Moreover, the restoration of the patient to health may be retarded by his being placed under external conditions of an unfavorable kind; and, consequently, these may likewise aid in giving rise to the affections with which we are now concerned. In scarlatina, as in every other complaint, an influence for evil may result from the patient's food being insufficient or unwholesome, or from his lying in a damp room or ward, or from his being deprived of fresh air, or, lastly, from his linen not being properly changed.

The sequelæ of scarlatina are of two kinds: some of them are simply continuations, but with increased intensity, of affections which arose during the course of the primary disease; others are due directly to the morbid state of the blood, which still continues. These last either appear as inflammations of the glandular structures or the synovial membranes of the joints, or take the form of exudations into the areolar tissue or the serous cavities.

The morbid conditions with which we are now concerned are the following:

1. *Ozæna post Scarlatinam.*—This occurs in scrofulous children, and also in persons previously subject to disease of the nasal mucous surface. According to Canstatt, a very dangerous form of this affection has been frequently observed in epidemics which have recently visited the coasts of the North Sea and the Baltic.

2. *Diseases of the organ of Hearing* are comparatively rare, but are also among the most obstinate and serious of the sequelæ of scarlatina. They may arise in various ways. In the first place, inflammation is apt to spread to the mucous membrane of the Eustachian tube from the tonsils and soft palate, which (as we have seen) are often much swollen and in a state of suppuration; and thus the hearing may become temporarily impaired. The same effect may, for a time, be caused by the pressure of the parotid gland, when intensely inflamed, upon the external auditory meatus. Moreover, certain independent diseases of the ear are liable to occur during the *stadium floritionis* of scarlatina, and to last for a shorter or longer time after its termination. These are observed chiefly in tuberculous or scrofulous subjects; they generally consist in a chronic inflammation of the mucous lining of the Eustachian tube, or in certain pathological changes affecting the interior of the organ of hearing.

A much more frequent condition, however, is the disease of the external auditory meatus known under the name of otorrhœa. This is often the result of a parotitis, or of an inflammation of the areolar tissue of the neck.

Persistent deafness after scarlatina is happily rare, and, when it occurs, is probably due to changes in the lining membrane of the tympanum (such as the exudation of plastic matter, softening, or suppuration), caused by the extension of inflammation along the Eustachian tube.

It would appear that a metastatic origin must be assigned to the form of *Otitis interna,* which commences suddenly, and with very violent symptoms, while the fever is at its height. This affection is remarkable for the rapidity with which it destroys the interior of the ear. It generally occurs on one side only, but often terminates fatally by pyæmia, or from the extension of inflammation to the membranes of the brain, erysipelas being at the same time present. In some cases death occurs after several weeks from caries of the petrous bone.

3. *Chronic enlargement of and suppuration in the Tonsils,* after scarlatina.—This is observed chiefly in subjects of scrofulous constitution.

4. *Croupous inflammation of the large Intestine.*—This is merely a continuation and extension of the intestinal affection which has already been mentioned among the complications of scarlatina.

5. *Inflammation of the Glands, and of the surrounding areolar tissue.*—This sequela differs from the disease of the same kind which arises during the presence of the exanthem in running a chronic course and in commencing during the period of desquamation. Moreover, in this affection the inflammation generally attacks first the structure of the gland itself, and afterwards the neighbouring connective tissue. Children suffering from rachitis or tubercular disease of the glands are especially liable to this complaint. In the great majority of cases, the organ affected is either one of the parotid or one of the submaxillary glands; this being much more rarely a sublingual gland, or one of the absorbent glands of the axilla or neck.

6. *Arthritis metastatica post Scarlatinam.*—This sequela, which is rare, but very destructive in its effects, belongs not so much to infancy as to the later years of childhood and to adult life. It is generally associated with inflammations of internal organs, and especially of serous membranes. It is analogous to the metastatic diseases which arise in women after childbirth, or follow typhus and other blood diseases. Any joint may be the seat of this affection; but the knees, elbows, and hip-joints are particularly liable to it. It generally sets in at the time when desquamation begins.

7. *Scarlatinal Dropsy.*—This so far surpasses in frequency all the other sequelæ of which I have been speaking, that its occurrence seems almost to be the rule, whereas their presence is quite exceptional. Hence, in monographs upon the subject of scarlatina, dropsy is, with justice, placed first among the complications and sequelæ of this exanthem. In fact, in many of these it works, it is the only one of which any mention is made. Some observers, indeed, have considered this affection to be so intimately connected with the essential nature of the scarlatinal rash, and so necessarily associated with it, that they have described the dropsy as part of the disease, under the name of the *stadium hydropicum.* And certainly, in children, the appearance of dropsy often completes the diagnosis, or enables the physician to determine that a scarlatina which had escaped notice has been present. It is, however, impossible to state in general terms, even approximatively, the conditions which give rise to this sequela; for every epidemic of the exanthem presents peculiarities of its own, the other circumstances remaining unaltered. Thus, in some epidemics dropsy occurs in almost every case, while in others it is rare; and yet no sufficient explanation of these differences can be found, whether in the treatment or management of the patients, or in the season of the year, the weather, the state of the barometer or thermometer, the direction of the wind, or any other cosmical or telluric influences.

Hence the question cannot but press itself upon the mind of every observer—What is the *cause* of the occurrence of dropsy after scarlatina?

This question has, of old, received very different answers, according to the state of medical science at the time and the prevalence of theoretical or practical views. Our forefathers attributed dropsy either simply to the scarlatinal rash being imperfectly developed; or to its having (as was said) undergone *retrocession* in consequence of the patient having caught cold; or to the absence or suppression of the critical sweat; or, lastly, to the skin not having been duly attended to (Vernachlässigung der Hautkultur), which last expression they did not more precisely define. But, by the careful clinical observation of children and grown-up persons affected with this disease, but living under the most varied conditions, it has been shown that no one of the above-mentioned etiological conditions affords an adequate explanation of the occurrence of scarlatinal dropsy.

In the first place, it is certain that from the greater or less intensity of the rash in a particular instance we can draw no absolute conclusion, whether favorable or otherwise, and that the amount of eruption stands in no causal relation whatever with the consecutive dropsy; for, in my experience, this sequela has been observed both in cases in which the efflorescence had been fully developed, and in those in which the skin was but very slightly reddened.

Nor does this complaint in any way depend upon the degree of desquamation, which, indeed, is well known to vary directly with the intensity of the efflorescence; the fuller the rash, the more profuse the subsequent shedding of the cuticle. Hence the very same reasons which prevent my ascribing the dropsy to the former condition render it equally impossible for me to attribute it to the latter.

Again, no one of the supposed causes of this affection is more generally called into requisition than that which is known as "catching cold" (die sogenannte Verkühlung). This, however, is a relative term, and so vague in its application that even medical men, much more the friends of the patient, have recourse to it to account for the occurrence of a dropsy explicable in no other way, although he may have been most carefully covered up, and not allowed to leave his room, or even his bed. But I have repeatedly had occasion to observe that, in the absence of other exciting causes, neither this nor any other of the sequelæ of scarlatina arises from the patient being kept cool, or even from his being exposed to the most severe weather. Thus I have myself seen instances in which children, during the whole course of a severe scarlatina, have attended school, and even in winter have run about the streets as usual, but in whom the disease was followed by no sequelæ; whereas, at that very time, other children, treated *lege artis*, well protected, and confined to their beds, became dropsical and died.

In fact, if I could refer to no other recent cases, it would be sufficient to draw attention to the favorable results obtained at Gräfenberg by Priessnitz, who not only treated scarlatinal patients with cold ablutions and affusions, but even allowed them to remain in the open air. Certainly, no one under his care had any fear of *catching cold.*

I think, then, that I may venture to assert that persons affected with scarlatina, in whom there is no internal predisposing cause of disease (ohne eine bestechende innere Ursache der Erkrankung), may be exposed to not inconsiderable changes of temperature without any danger of the ill effects which are generally dreaded.

As for the *retrocession of the perspiration* (das Zurücktreten der Schweisse), the expression is, in the first place, *obsolete*. For the sweat, being already an excreted fluid, can no more be reabsorbed than urine which has been passed under one in bed. But, as is well known, it is in every acute febrile complaint a good sign that the perspiration should be abundant, and the skin soft and not intensely hot; while, on the other hand, the cessation of the skin's action, and a hot and dry condition of the surface, are always unfavorable symptoms. Now if, in a case in which the cutaneous secretion was previously abundant, an exacerbation of the fever should occur, or if any new complication should set in, the salutary perspiration will generally cease; but, under such circumstances, this is obviously the result, and not the cause, of the aggravation of the disease.

It is very much the same with the so-called *retrocession* of the scarlatinal efflorescence. To our forefathers, the rash was the only, or at any rate the principal, symptom of the complaint; and therefore we can understand that they should have attached great importance to its presence. But we now know that it is but a part of the whole disease, and that the greater or less intensity of this symptom, and its shorter or longer duration, are far from being the sole or even the chief indications of the severity of the scarlatina. Moreover, in complaints attended with a hyperæmic state of the skin, the sudden disappearance of the rash is always a proof that the disease has previously undergone aggravation, which renders the surface anæmic, because a condition of general collapse is induced.

Thus, then, a moderately developed rash, and the presence of but slight fever, are to be considered good signs in scarlatina; and, on the other hand, it must be regarded as unfavorable that the efflorescence should suddenly fade, and that intense febrile disturbance or any severe complication should set in. But every one who is acquainted with the facts to which I have been referring will look on the disappearance of the rash as the *effect*, and not the *cause*, of the aggravation of the disease; and such a person certainly will not attribute the occurrence of dropsy to a retrocession of the efflorescence.

Since Dr. Bright first drew attention to the pathological changes in the kidney, and to the alteration in the chemical constitution of the urine, which exist in chronic forms of dropsy, his conclusions have been extended and perfected by observations based on post-mortem examinations, as well as by microscopical and chemical investigations; and, during this time, it has gradually become the general opinion that the dropsy which follows scarlatina is the *immediate* result of an albuminuria, that is, of Bright's disease of the kidney. But although this discovery explains one of the intermediate steps in the production of this effect, it does not teach us the primary cause of the dropsy. The further question arises,—what is it that gives rise to the renal disease and to the albuminuria? Now, some have given an answer to this question, on the principles of the older school of pathologists, by attributing the affection to the patient having caught cold, or, in other words, to the very agencies which we have already been discussing; while others, in the spirit of more modern opinions, have ascribed it to the presence of a foreign element, the scarlatinal poison, which, they suppose, still remains in the blood. Even this last view may be said to be the representative of the ancient doctrine of imperfect crises.

The explanation given by these writers is, then, somewhat of the following kind:—Although the scarlatinal poison cannot be demonstrated by any chemical or physical tests, there is yet no doubt of its existence. The organ which excretes it is the skin, of which the action is, therefore, reciprocal to that of the poison. The complete elimination of this substance may be effected by a very intense efflorescence; and, according to others, by profuse sweating, an abundant desquamation, and a certain degree of renal congestion. But if elimination does not occur, there then arise certain pathological changes in both the skin and the kidney, or in one of them only. The poison is, in fact, a second time, or repeatedly, determined to the cutaneous surface. This does not give rise to a fresh efflorescence, because the vital activity of the skin has been weakened by the previous specific inflammation. Consequently, a watery effusion is poured into the subcutaneous tissue. Again, the increased efforts of the kidneys to eliminate the poison produce a congestion of these organs, and, as a result of this, a diminution in their secreting action. The congestion leads, ultimately, to an exudation into the tubes of the cortical substance. Part of the material thus thrown out is excreted in the urine in the form of albumen; the remainder becomes deposited, and forms granulations in the substance of the kidneys. Lastly, the diminished secretion of urine leads to fresh effusion into the subcutaneous areolar tissue, and into the serous cavities (Behrend).

As to the validity of this hypothesis, I cannot at the present time express a positive opinion; and I am the less inclined to speak decidedly about it, because daily experience certainly teaches that albumen is found in the urine under other conditions, as well as in scarlatina and in the acute form of Morbus Brightii. This is the case, for instance, during pregnancy, and also in many of the so-called blood diseases (such as typhus, purpura, puerperal affections, &c.), in which, although dropsy may be present, no connection can be shown to exist between this symptom and the albuminous state of the urine.

Moreover, if we examine the urine of a scarlatinal patient several times each day, testing separately each quantity passed, we arrive at the very interesting fact that even though some specimens contain albumen, others may be altogether free from it. Thus this substance may be present in the morning urine, and yet absent in that excreted in the evening, or *vice versâ*. In some cases, again, albumen can be detected only during one day, or even on but one occasion; and when this occurs, no dropsy makes its appearance either at the time or afterwards.

The period at which scarlatinal dropsy begins varies greatly in different cases. The earliest symptoms of it may be observed either at the commencement of the exanthem, or during its course, or in the stage of desquamation. Most frequently, however, it commences during the second or third week of the disease, that is to say, when the rash has completely disappeared and desquamation has begun.

It has been stated by many observers that the sixth week is the latest period at which dropsy ever makes its appearance; and, in consequence, the precautionary measures have been systemically carried to the end of that time. However, in the cases of scarlatina which have come under my observation, this sequela, if it has appeared at all, has always commenced within four weeks.

It is of practical importance to notice whether the dropsy is acute and attended with somewhat intense fever, or developes itself slowly and gradually, with but slight febrile disturbance. In the first case, it is termed *active* dropsy; in the second, *passive*.

In the active or acute form of this affection, the effusion of serum takes place very rapidly, and is attended with increased vascula action, and with pain, due to the hyperæmia and the tension of the parts affected. In fact, so far as the internal organs are concerned, the symptoms of this kind of dropsy are so similar to those of inflammatory affections (Exsudatbildung), that no strict line of distinction between them can be drawn. Nor is it less difficult to define the limits between the active and the passive forms of dropsy; for even effusions which take place slowly may occur by fits and starts, and be attended at one time with more, at another with fewer inflammatory symptoms.

The principal kinds of dropsy consecutive to scarlatina may be arranged in their order of frequency as follows:—anasarca, dropsy of the serous cavities, œdema of the lungs, œdema of the brain, œdema of the glottis, general dropsy.

(1) *Anasarca* forms two thirds of the whole number. Its characters are those ordinarily observed in dropsy due to renal disease. While it is present, the desquamation seems to be suspended, in consequence of the saturation of the layers of epidermis with fluid; but when the swelling has completely subsided, the cuticle again begins to peel off, being apparently enabled to do so only by the removal of the tension caused by the serous effusion.

This affection not only often occurs alone, but also frequently precedes or accompanies ascites or one of the other forms of dropsy.

(2) *Ascites.*

(3) *Hydrothorax.*—This is observed less frequently than the preceding varieties; its course is often remarkably rapid.

(4) *Hydropericardium.*—This very rarely occurs by itself, forming, in most cases, part of a general dropsy.

(5) *Œdema of the lungs.*—This is observed in association with general anasarca, and particularly with hydrothorax.

(6) *Œdema of the glottis.*—This, again, often coexists with œdema of the lungs.

(7) *Œdema of the pia mater and the cerebral substance.*—This affection is met with only in cases of prolonged general dropsy, in which, indeed, it seldom fails to occur.

It sometimes appears to develope itself rather rapidly, with symptoms of drowsiness, &c.

(8) *Hydrops ventriculorum cerebri.*—This variety, although always mentioned in text-books among the other forms of dropsy, is in reality seldom observed in cases of scarlatina.

Under the name of *Encéphalopathie albuminurique,* MM. Rilliet and Barthez[1] describe a complication of scarlatina in which severe and acute cerebral symptoms present themselves, such as are observed in ordinary Morbus Brightii. This affection appears between two and four weeks after the commencement of the anasarca, lasts from one to seven days, and terminates, for the most part, in recovery. The difference between it and other cerebral diseases is the fact that, when it subsides, the patient perfectly recovers the power of sensation and motion, as well as his intellectual faculties. I am not, however, disposed to adopt the name proposed for this affection by MM. Rilliet and Barthez, and, therefore, I content myself with a simple reference to their observations.

I must, however, take care to mention the not unimportant fact, that when albuminuria has once occurred as a sequela of scarlatina, it is liable to return, even though it may for a time have completely disappeared. This is particularly the case with patients anæmic from other causes, in whom it may thus recur several times, with more or less well-marked dropsy, so as even ultimately to prove fatal. If it takes place at all, a relapse is generally observed within two months; but one instance has come under my notice in which the albuminuria returned, with great intensity, after four months had passed. Even then, however, although the urine contained blood, and also fibrinous casts, the patient ultimately recovered.

In conclusion, I have to remark that, besides those which have been mentioned, many other diseases be observed after scarlatina. Among these are inflammations of various internal organs, typhus and intermittent fever. Moreover, certain chronic complaints, such as tuberculosis[2] and rickets,[3] are frequently aggravated by an attack of this exanthem. None of these affections, however, deserve to be termed *sequelæ* of scarlatina; for they do not stand in a sufficiently direct relation to this disease.

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[1] 'Traité clinique et pratique des Maladies des Enfants,' 2me éd., tome iii, p. 182.

[2] MM. Rilliet and Barthez (op. cit., tom. iii, p. 201) were, indeed, led by their observations to conclude that tuberculous children are seldom affected with scarlatina, and even that an attack of this exanthem gives tuberculosis a tendency to undergo a rapid cure. These writers therefore believe that the diseases in question are mutually antagonistic. My experience, unhappily, does not confirm these statements.

[3] In little children, the aggravation of rickets by scarlatina is often expressed, during life, by the presence of pain in the cylindrical bones, which are particularly tender on pressure; and, on post-mortem examination, these bones are found to present numerous osteophytes (zahlreiche Osteophyten).

Prognosis of Scarlatina.

External and internal conditions of every possible kind combine to modify the course taken by this disease in different instances, and to determine its issue in recovery or death. *That scarlatina, even in the mildest form, is never a trifling complaint,* is a maxim which has been only too fully verified by many sad cases. However favorable the early symptoms, the appearance of some complication may render the disease serious; and even when the exanthem has run its course in a perfectly regular way, there is still the danger that one of the sequelæ may present itself. Hence, in a case of scarlatina it is scarcely possible to give what is termed a *prognosis;* for our predictions are always liable to be falsified by the events of the very next day. We are, in fact, unacquainted with any means of measuring the intensity of the disease. No correct conclusion as to the probable issue of an attack of this exanthem can be drawn, either from the bodily condition of the patient, from his having previously passed through other complaints, from his age, nor, lastly, from the external circumstances under which he is placed. In malignant epidemics, scarlatina carries off persons (both children and adults) the most robust and most carefully nursed, just as rapidly as those who are sickly and neglected.

Hence, in this disease, every fresh symptom of an unusual kind should be regarded with suspicion; and the greatest caution must be observed in predicting that any particular case will terminate favorably.

The most important point of all, as the basis of a conjectural prognosis, is the character of the prevailing epidemic. At certain times, scarlatina is attended with most fatal complications, which may even set in before the rash makes its appearance, and form a more prominent feature of the disease. Cases are recorded in which the very first symptom observed was a diphtheritis or a gangrene, and in which death occurred before any one had an idea that the patient was affected with scarlatina.

Again, even sporadic cases of this exanthem take a peculiarly malignant course during the prevalence of certain complaints, such as typhus, cholera, or dysentery. On the other hand, it may be the sequelæ of scarlatina, rather than the complications, which form the principal cause of anxiety. In certain epidemics, dropsy is more common and runs a more fatal course than is usually the case.

In conclusion, all my present experience leads me to say, with Löschner, that I have never yet seen a *benign epidemic* of scarlatina. Towards the end of every epidemic, however, the cases are generally more simple, and run a more favorable course. My own observations do not lead me to attribute to the season of the year any perceptible influence upon the issue of this exanthem.

With reference to the value of individual symptoms as indications of the probable course of scarlatina, I may make the following remarks:—An unusual lengthening of the period of incubation forebodes that the course of the exanthem itself, as well as of its sequelæ, will be irregular. The appearance of the rash simultaneously with the so-called prodromi, or its breaking out suddenly over the whole surface of the body, announces a violent attack of the disease. If no severe febrile symptoms nor any complications are present, the fact that the efflorescence is incompletely developed may be taken as a sign that the scarlatina will run a rapid and favorable course; but if an imperfect rash is accompanied by intense fever, or by any unusual symptoms (such as delirium, sopor, dysphagia, or dyspnœa), it then indicates the presence of some perilous complication. The sudden disappearance of the eruption, when it had been fully developed—its retrocession, to employ the usual term—arises from some dangerous condition, and, consequently, is, in most cases, of evil omen. On the other hand, the persistence of the rash beyond the usual period, particularly should it no longer fade beneath the pressure of the finger, if not caused by any previous chronic cutaneous affection, points to the continuance of some internal disease, generally of the lungs or air-passages, which disease had arisen during the *stadium floritionis*. Differences in the intensity of the exanthematic eruption or in the amount of desquamation are of no special prognostic import.

Among the various forms which the eruption may display, those above described as the *S. variegata* and the *S. miliaris* are alone of importance, the former because it suggests the fear that the complaint will be attended with obstinate bronchitis and pneumonia, as complications or sequelæ; the latter because it is frequently a symptom of pyæmia. However, when the miliary efflorescence breaks out at the same time as the ordinary scarlatinal rash, and the other symptoms are not particularly severe, its presence is not of any great consequence. But if such an eruption makes its appearance at a later period (when the scarlatinal efflorescence is fully out), and if it is accompanied with an extreme exacerbation of the fever, and with sopor and delirium, gangrene or ulceration of the tonsils, inflammation of the lungs or of serous membranes,—in these cases it is generally the immediate precursor of death.

Petechiæ and ecchymoses are of very serious import when associated with other alarming symptoms, indicative of the state which I have ascribed to a dissolution of the blood. The same may be said, likewise, of bleeding from the nose, if accompanied with hæmorrhage from other parts, such as the gums or the intestinal surface; but slight epistaxis by itself is often beneficial by giving relief to the headache from which the patient suffers.

A diarrhœa, appearing early in the course of the disease, and not very severe, is not a bad sign in adults; but if protracted and accompanied with tumefaction of the abdomen, it tends to exhaust the patient. In infants less than a year old, diarrhœa is always dangerous.

The fact that in a particular case micturition is painful and the urine scanty and albuminous at the commencement of scarlatina, is a proof that the disease is severe, and is, indeed, an indication of great danger to the patient, from the probability that acute dropsical effusion will supervene. At an advanced stage of the complaint, too, a deficiency in the amount of urine secreted is generally the precursor of dropsy.

The uniform continuance of the perspiratory action of the skin is a good sign; and sweats breaking out suddenly are regarded as favorable crises.

A soft regular pulse, its beats not much exceeding 100 in the minute, accompanies benign forms of scarlatina; and the same may be said of the respiration, when deep, and in due proportion to the rate of the pulse, and of the temperature, when below 104° Fahr. On the other hand, it is to be regarded as a bad sign that the pulse should be hard, or very rapid (beating 120 to 160 times a minute), or irregular, or intermitting; or that the breathing should be either much quickened or very slow; or, lastly, that the skin should be pungently hot, its temperature being above 104° Fahr.

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Among the complications of this exanthem, the more severe form of dissolution of the blood is quickly fatal, and that whether the patient was or was not previously in good health. It is an ominous symptom that sudden loss of conciousness, with extreme depression of the pulse and of the muscular power, should occur at the very commencement of the disease.

Parenchymatous inflammation of the tonsils is serious on account of the results to which it leads. If it should be accompanied by delirium or convulsions, with intense hyperæmia of the brain, the near approach of a fatal termination is to be apprehended. Should gangrene arise, we may still hope for the recovery of the patient, so long as the gangrenous spot is circumscribed and the surrounding parts are not œdematous. When an extensive diphtheritic affection leads to sloughing, or spreads to the larynx so as to produce croup, there is rarely any prospect of a favorable issue. Inflammation of the areolar tissue of the neck is dangerous in proportion to its extent, and to the rapidity with which it sets in. Its results are most serious when it attacks the lower part of the parotid region, or the neighbourhood of the submaxillary gland.

Rheumatic pains are in themselves of no consequence; but they must not be altogether disregarded, because they are liable to be followed by affections of the serous membranes.

Peritonitis, pericarditis, pleuritis, pneumonia, bronchitis, are dangerous complaints, even when they occur alone; and as complications of scarlatina, they are, of course, no less serious. The same thing may be said of dysenteric affections and of protracted diarrhœa.

Some of the sequelæ of this exanthem are of importance, from their insidious course, and from their interfering with the functions of the part affected, rather than from their exerting any injurious action on the organism as a whole. Among these are the inflammations of the external auditory passage, and of the mucous membranes of the nose and the Eustachian tube; hypertrophy of and suppuration in the tonsils; and the inflammatory affection of the glands and surrounding areolar tissue. On the other hand, the so-called metastatic inflammation of the joints, the glands, or the organ of hearing, is extremely dangerous.

When dropsy is present, a comparatively good prognosis is warranted by the following circumstances:—The patient's health having previously been good; the urine being pale and abundant, and containing little or no albumen; the skin being inclined to perspire; the serous effusion remaining confined to the subcutaneous areolar tissue; the functions of the brain and those of the respiratory organs being undisturbed; and lastly, any decrease in the amount of œdema, even though this amendment should be only transitory. On the other hand, the prospect is more threatening when the patient was previously anæmic, or the subject of any dyscrasia (as, for example, in children who are the offspring of syphilitic parents, or affected with scrofulosis or rickets); when albumen has been present in the urine from the very beginning of the scarlatina, and goes on increasing in quantity; when the urine is of a dark colour and scanty, containing pus, blood, fibrinous casts, or cells derived from the renal tubes (Enchymzellen); lastly, it is a bad sign that the skin should be dry, or the effusion very extensive, collecting in the interior of the body, or that the concomitant fever should be intense.

Death occurs in scarlatina from the following causes:—

1. From dissolution of the blood, due to the scarlatinal poison.

2. From paralysis of the nervous centres, as a consequence of plastic or serous effusions, meningitis, or œdema cerebri.

3. By suffocation, from acute œdema of the lungs or glottis, or from serous effusion into the pleura and pericardium.

4. From pyæmia.

The mortality of this disease is not the same in every epidemic, but, on the contrary, varies considerably. Thus, in malignant epidemics of scarlatina, 20 or 25 per cent. of those attacked die; whereas, when the complaint is prevalent in a mild form, it oftentimes does not carry off more than 5 per cent. of those affected with it.

Etiology of Scarlatina.

The contagiousness of this disease cannot possibly be doubted by any medical man who in his practice has seen much of children's complaints, or of institutions of which a large number of children, or even of adults, are inmates. In foundling and orphan institutions, in nursing establishments, children's hospitals and boarding schools, and also in workshops, manufactories, hospitals, and prisons, one has abundant and lamentable evidence of the infectious nature of scarlatina.

Confining myself, in the first place, to my own experience, I may say that I have often enough had occasion to observe that one child suffering from scarlatina and placed in a children's hospital among other patients has soon infected half of them with this disease, which, perhaps, was not at the time prevalent in an epidemic form. If, under these circumstances, the cases of scarlatina are not at once isolated, the complaint may not subside for years, being kept in a stationary condition by the constant admission of fresh children into the institution.

What I have just stated with regard to hospitals for the sick is true also when applied to separate families, or to particular towns or districts, although many circumstances combine to make it difficult of proof. The transference of the disease from family to family, or even from one locality to another, may often be clearly traced, and can be satisfactorily explained only by admitting that scarlatina is infectious. According to trustworthy writers (Duncombe, Noirot), it has been proved that this complaint has been introduced by strangers into certain islands, such as the Bahamas and the Antilles, in which it had never prevailed, at any rate within the memory of the inhabitants.

The most conclusive evidence of the contagious nature of this disease would certainly be its direct propagation by the transference of some inoculable matter from one individual to another. Unfortunately, the experiments which I have made with children suffering from scarlatina have not hitherto been attended with the same success as in the case of measles.

In my opinion, then, this complaint is always produced by a specific contagious principle; I do not believe that it ever arises spontaneously, any more than smallpox, measles, or syphilis. It is true that the conditions necessary for the development and diffusion of the exanthemata are far more difficult to determine than is the case with syphilis; but this is no reason for doubting that we shall hereafter discover the cause of the infectious character of these diseases. Indeed, formerly, when the cause of scabies was unknown, even that affection was supposed to be of spontaneous origin, till at last the finding of the acarus removed all doubt as to its contagious nature. Moreover, it is certain that, since the first appearance of the exanthemata, the complete and universal extinction of any one of them has never occurred. In the case of scarlatina, we have, in the registers of deaths, a sufficient proof that in Vienna this disease has never absolutely died out during the course of the last fifty years. when it has not prevailed epidemically to a marked extent, it has always existed in a sporadic form in some or other of the suburbs or outskirts, being sometimes most prevalent in the higher parts of the city, while at other times it affects chiefly those which are at a lower level. So also the official reports of epidemics in the province of Lower Austria prove that the disease has always been present sporadically in one part of the country or another, and that it has not in any year been completely absent.

Now this fact, if established beyond dispute, is in itself a sufficient ground for inferring the presence of a contagious principle which always exists, but is under some circumstances restricted to certain localities, while under other conditions it becomes more widely diffused. It is true that we are not as yet able to say what these conditions are, and that we can only take refuge in vague expressions, referring them to causes with which we are still imperfectly acquainted; such as variations in temperature, or in the amount of moisture present in the air; states of the weather; barometric or thermometric changes; telluric or cosmical influences, &c.

As a rule, scarlatina attacks the individual once only in the course of his life. Indeed, during the most severe epidemics I have never in a single instance seen either a child or an adult who had already passed through the disease affected with it for the second time, even among persons who have associated freely with patients suffering from scarlatina.

What is the nature of the contagious principle of scarlatina? What are its properties? During what stage of the disease is it developed? In which period is this complaint most highly contagious?—These questions, although frequently asked, have never yet been completely answered. Being myself unable to explain these points fully, and being very averse to dealing with hypotheses, I will confess my ignorance rather than attempt "*obscura obscurioribus dilucidare.*"

Diagnosis of Scarlatina.

The presence of a red rash upon the skin does not in itself warrant the assumption that the case is one of scarlatina; to justify such a conclusion, the rash must be accompanied by fever and an inflammatory affection of the throat, and must be followed by desquamation. The diagnostic signs of this exanthem are these: the existence of a special efflorescence; its mode of distribution over the cutaneous surface; the inflamed state of the parts concerned in deglutition; the peculiar desquamation; the spreading of the disease by contagion; its epidemic occurrence; the febrile symptoms which accompany it; and, lastly, the sequelæ to which it gives rise.

In some instances, a large number of these characters are present; in others, only one or two of them. In the former case, the recognition of scarlatina is easy; in the latter case, it may be very difficult. Indeed, it may happen that the contagiousness of the disease is the only proof of its nature, or that we cannot make a diagnosis till we have watched the course of the case for a considerable time, or even till it has passed into the *stadium desquamationis*.

The principal cutaneous affections with which scarlatina can be confounded are the following:—

1. *Erythema.*—Under this head, I here include all those morbid reddenings of the skin which, when generally diffused, are termed erythemata, but which, when they present distinct maculæ, receive the name of roseola. They are generally unattended with fever; and any febrile symptoms which may be present are due to some other disease. Moreover, these rashes are very irregular in their mode of invasion, in their distribution over the cutaneous surface, and in their duration; their different stages occupy but a very short space of time; they are not followed by desquamation, and are not contagious.

2. The distinctions between *measles* and scarlatina may be best displayed in a tabular form:—

Morbilli.	*Scarlatina.*
A. In the Stadium Prodromorum,	
There is a catarrhal inflammation of the lining of the respiratory tract, including the Schneiderian membrane, the mucous surface of the larynx and trachea, the palpebral conjunctiva, &c.	The parts principally inflamed are those concerned in deglutition, namely, the tonsils, soft palate, and fauces.
As a result of these affections, the patient suffers from a cold and cough, and from epistaxis and intolerance of light: his eyes are red, and there is swelling of the face, round the mouth, nose, and eyes.	Hence the chief symptoms are difficulty of swallowing and consensual (consensuelles) vomiting, with swelling of the sides of the neck.

Morbilli.	*Scarlatina.*
The fever is less intense; the pulse between 100 and 120; the temperature of the skin moderate.	The fever is intense; the pulse between 120 and 140; the temperature of the skin much above the normal height.
The duration of this stage is from three to five days.	The duration is not more than one or two days.

B. In the Stadium Eruptionis,

The efflorescence appears first on the face, and slowly spreads over the trunk and limbs, its diffusion occupying on an average thirty-six hours.	The eruption breaks out on the neck and upper part of the chest, and diffuses itself rapidly (within eighteen hours) over the other parts of the body.
The fever and the catarrhal symptoms persist in about the same degree of intensity.	The fever and the anginal symptoms acquire increased severity.

C. In the Stadium Floritionis,

The maculæ are of the size of the finger-nail, of an irregular form, and of a colour varying from yellow to a brownish red, and are separated from one another by tracts of healthy skin. They are most abundant on the face and trunk, but more scanty on the limbs, and particularly on the palms of the hands and soles of the feet. They often take the form of papular elevations, due to a swelling of the orifices of the hair-sacs.	The rash consists of red patches, at least as large as the palm of the hand, or, still more generally, covers the whole surface of the body without interruption. It is of a scarlet colour, or presents a slight tinge of blue. Its greatest intensity is on the neck and chest; but it is not much less fully developed on the extremities, or on the hands and feet. The face is generally free from it.
The only subjective sensation is a feeling of slight tension and heat in the skin.	The patient feels a more or less intense burning sensation in the skin.
During the second half of this stage the fever and other concomitant symptoms diminish in intensity.	The fever and other concomitant symptoms persist, throughout the whole of this stage, without diminution.
The duration of this period is from three to four days.	The duration of this period is from two to six days.

D. In the Stadium Desquamationis,

The desquamation is furfuraceous, extending to different parts of the body in anatomical order. There is,	The desquamation consists in the separation of large membranous pieces; the part also assumes a yellow colour.

Morbilli.	*Scarlatina.*
at the same time, a considerable deposition of pigment.	The desquamation is most marked on the hands and feet, while the yellow tinge is most obvious on the face and trunk.
The *sequelæ* of *morbilli* consist chiefly in inflammatory diseases of the respiratory organs, and in diphtheritic or gangrenous affections.	The principal *sequelæ* of *scarlatina* are, inflammatory affections of the glands and areolar tissue, dropsy of the subcutaneous connective tissue and serous cavities, and, lastly, albuminuria.

3. Another eruption which may be mistaken for scarlatina is *Miliaria*, especially that form of it which has been termed *M. rubra*, and which is, I think, identical with the affection known as *sudamina*. The only cases in which this mistake can occur are, however, those in which the ordinary scarlatinal rash is combined with a miliary eruption, or with sudamina; and, even then, the exanthem presents so many characters which are altogether wanting in every form of miliaria, that an error is scarcely possible. Further details will, however, be given under the head of Miliaria.

Treatment of Scarlatina.

Medicines have been employed against scarlatina for two distinct purposes: first, in the hope of protecting the organism against the contagion of this complaint; secondly, with the object of counteracting the disease itself in its irregular forms. I have, therefore, to speak of the *prophylactic* as well as of the *curative* treatment of scarlatina.

For the purpose of warding off an attack of this disease, medical men have proposed all sorts of prophylactic measures, and have administered medicines of every kind: unfortunately, these have always, within a very short time, turned out to be perfectly useless. The older physicians had great confidence in the mineral acids, and the hydrochloric acid has recently been vaunted as a prophylactic by Godelle. Hufeland and Hahnemann ascribed to belladonna a protective influence against scarlatina; hydropathic practitioners have recommended the daily use of cold ablutions; Webster advised that the body should be washed with dilute vinegar; Dehne, that inunction with oil should be practised.

At the present time, however, there is probably scarcely a single hospital physician or practitioner of experience, who sets much value upon any one of the prophylactic measures which I have mentioned. We believe, then, that the only effectual prophylaxis of scarlatina consists in isolating the patients from those who are unaffected, as early and as completely as possible.

As for the curative treatment (in the narrower sense of the word), the *pium desiderium* to possess a remedy which should neutralise the scarlatinal virus formerly led persons to employ emetics, the so-called antimiasmatic and diaphoretic agents (such as chlorine, acetic acid, carbonate of ammonia), irritants applied to the cutaneous surface, the antiphlogistic method (venæsection and calomel), and, lastly, the cold-water cure, and even rubbing the surface of the body with bacon. Each one of these therapeutic measures, however, proved to be either inert, or rather injurious than useful.

In my opinion, therefore, and according to my experience, we have not yet succeeded in discovering any specific remedy for scarlatina, nor in establishing any exclusive method of effecting a cure of this disease. But I am far from saying that we are to put our hands in our pockets, and leave the complaint to run its course without interference.

For, although we possess no antidote to the contagious principle, we nevertheless have remedies to counteract its destructive effects. The treatment, therefore, should always be of a symptomatic kind, and directed mainly against those complications and sequelæ which disturb the regular progress of the disease.

In cases in which scarlatina is uncomplicated, and the fever and angina slight, and in which there are no other symptoms to cause anxiety, no medicinal treatment is necessary; all that need be done is to give the patient cooling acid drinks, to administer small doses of one of the vegetable or mineral acids, and to direct the proper hygienic measures to be carried out.

Perhaps it may not be superfluous for me to describe, in detail, the instructions which I am in the habit of giving for the management of patients affected with scarlatina.

1. Cool, refreshing drinks (such as cold spring water, lemonade, water to which the juice of some acid fruit has been added, &c.) are to be given freely and at short intervals. These drinks are very

acceptable to the patient, and fulfil the indications afforded by the presence of fever, and of affections of the mucous membranes and digestive tract, far better than the tepid, and often heating, mucilaginous fluids which were formerly administered.

2. The diet should consist of weak meat broth or gruel, with milk, and fruits which have been cooked.

3. The air should be changed at least twice a day, and should be kept cool rather than warm, its temperature never being permitted to exceed 66° Fahr. The sick-room should not be allowed to be crowded, the persons required to nurse the patient, and to attend to his wants, being alone let to remain in it.

4. The patient should keep his bed, but the coverings over him should be only just warm enough to prevent his feeling cold. Feather beds and heavy coverlets must, as far as possible, be avoided; and movable screens round the bed should be taken away, because they interfere with the due circulation of the air.

5. The ordinary habits of cleanliness are never to be neglected; the bed- and body-linen may be changed as often as necessary; and the patient's hair may be combed every day, and his face and hands washed with soap and water.

6. A person suffering from scarlatina should not be allowed to leave his bed until, for two or three days, the excessive thirst has disappeared, the skin has been soft and perspiring, and the pulse in its normal condition.

7. After the termination of the *stadium desquamationis*—that is, about the end of the third week (supposing the disease to run the usual course)—the patient may be ordered to take a tepid bath every third day.

8. As soon as desquamation has passed off from the hands and feet, as well as from the face—that is, at the commencement of the fourth week from the first appearance of the rash—the patient may be dismissed from further treatment, and allowed to go out in the open air—unless, indeed, any fresh symptoms should arise to prevent this being done. The ordinary term of six weeks is unnecessarily long in many cases in which scarlatina takes a normal course; while, on the other hand, when complications are present, it is often not sufficient to allow of the subsidence of all the symptoms of the disease.

In the medicinal treatment, I purposely avoid giving either diaphoretics or purgatives;—the former, because, without any object, they increase the congestion of the skin; the latter, because they needlessly irritate the intestinal surface, already in a morbid condition.

I cannot refrain from insisting, for the second time, on the fact that, in diseases which have to pass through a typical course, and are attended with a more or less regular series of symptoms—among which diseases all the exanthemata (and, of course, scarlatina) are included—we must look rather to hygienic measures than to the administration of medicine. The simpler the treatment, the more easily does nature bring about the cure for which we hope. Hence, in cases of scarlatina which run a regular course I prefer the "expectant method," combined with proper hygienic management, to every kind of active interference by means of medicines.

On the other hand, if complications arise, whether at the very commencement of the disease or during its course, we must prescribe those remedies which check the progress of these secondary affections, or remove them, or at least diminish their severity, when they have already developed themselves.[1]

In the treatment of the angina nothing succeeds better than giving the patient ice-cold water, or small pieces of ice, night and day, without interruption, till the swelling of the fauces has subsided and the pain during deglutition and the other symptoms have disappeared. Should the enlargement of the tonsils increase rapidly, nitrate of silver, either in the solid form or in solution, may be applied with great advantage; and the other measures usually carried out under such circumstances must be adopted.

In consequence of its rapid course, we are altogether powerless against that form of scarlatina which I have attributed to a dissolution of the blood. None of the remedies which have been proposed (including camphor, musk, the application of blisters, the abstraction of blood, and the cold-water cure) are able either to check its progress or to prevent its terminating fatally. It is, however, as well to endeavour to alleviate the symptoms by the employment of cold affusions, frictions, "packing" in wet sheets, and cold applications to the head, or to use the remedies generally prescribed in typhus, such as quinine, acid drinks, or even opium and morphia, infusum ipecacuanhæ, &c.

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[1] The description of the symptoms of the complications and sequelæ of scarlatina having been omitted in the translation, the details of their treatment are also left out. The few remarks which follow have been retained, because they seemed of some importance, or because the practice recommended differs somewhat from that usually adopted in this country.—[Ed.]

We possess no specific remedy for the consecutive dropsy any more than for scarlatina itself. In children who obstinately refuse to take medicine, and in patients who are treated homœopathically or hydropathically, we often observe that nature, without medical aid, effects the removal of dropsical accumulations by abundant perspiration and diuresis. It is our business, therefore, to assist the efforts of nature, at the right time and in the proper way, and not to check them, in our impatience, by continually giving drugs, and repeatedly changing our prescriptions. In this instance, again, the maxim holds good that the more simple the treatment the more certain is its success.

The first question that suggests itself is whether we can, by the use of suitable remedies, prevent the occurrence of dropsy when its approach is already indicated by the presence of albuminuria or other unequivocal symptoms.

In my opinion, we can succeed in doing this only when the effusion takes place slowly, and is unattended by the symptoms of inflammatory affections of internal organs. Under such circumstances, if the patient is of good constitution, we should confine him to a strict diet, and prescribe gentle laxatives and the use of baths and cold ablutions; whereas to anæmic persons we should give nourishing and easily digestible food, and the preparations of iron and quinine. By these means, if we do not altogether prevent the occurrence of dropsy, we shall, at any rate, very greatly check it.

As is the case with the other complications of this exanthem, the treatment of albuminuria and its effects must be based on the same principles which guide us in the management of such complaints when independent of scarlatina.

In conclusion, I may say a few words concerning the specific methods of treating scarlatina which have been advocated by physicians and by unprofessional persons. I refer to the use of cold water for the cure of this disease, and to Schneemann's plan of rubbing the surface of the body with bacon.

The treatment by cold water was recommended, long since, by Bateman, and has recently been carried out by the hydro-therapeutists. It includes the use of cold *affusion*, "*packing*" in cold wet sheets, and cold *ablutions*. With regard to the manner in which *affusion* should be practised, the rules laid down by Curié are still the most complete which have been given, and are just the same as the procedures adopted by the modern hydropaths. Curié made the patient sit in an empty tub, and poured over his head four or five gallons of cold water, so as to wet his whole body. This treatment was commenced soon after the eruption first appeared, and was repeated as often as the skin became hot and dry, generally from six to twelve times daily. At the same time acid cooling drinks were given. After each affusion the patient, having been dried, was at once put into bed and left to himself.

The "*packings*" are carried out on the Gräfenberg plan. They are used indiscriminately in all cases, with the object of inducing free perspiration rather than for the purpose of cooling the skin. One or two large sheets are first dipped in water and well wrung out; the patient is then wrapped in them from the chin downwards, the head, with the exception of the face, being afterwards enveloped in wet napkins, outside which, lastly, ice (Eisumschläge) is applied if intense congestion is present. He remains thus packed up from two to four hours, during which time cold water is given him to drink. At the end of this period the patient, now in a state of profuse perspiration, is again made to take a cold bath, or has cold water poured over him. This procedure is repeated at least twice daily, or even still more often, particularly if the skin is very hot and dry.

The third method of employing cold water, that of *ablution*, is more generally applicable than either of those which I have been describing, and is attended with less difficulty in practice, while it yet accomplishes the object aimed at. It consists simply in washing the patient with sponges dipped in cold water, after which his skin is well rubbed with pieces of flannel, this procedure being repeated as often as the heat and dryness of the surface increase. Tepid water instead of cold may be used for this purpose, should it be more agreeable to the patient.

It appears to me, however, that in many cases (especially among children, who form the majority of scarlatinal patients) the systematic application of cold water would not be well borne, and would be difficult to manage. Indeed, I think it would be positively injurious in many of the affections which accompany this exanthem, and particularly in diseases of the circulatory or respiratory organs, in which complaints a sudden excitement might prove immediately fatal. At any rate, medical men should take into consideration the condition of the patient and the other circumstances of the case, before entering upon such an heroic plan of treatment.

The method recently proposed by Schneemann of curing scarlatina by rubbing the surface of the body with bacon is allied to the plan recommended by [illegible] in [illegible] of anointing the skin with oil. Each of these authors was led to suggest the practice of inunction by the idea that in scarlatina the principal danger to the patient arises from the functions of the skin being interfered with by the disease in the same way as they are by extensive burns. It was supposed that rubbing fat or fatty substances into the cutaneous surface would preserve the integrity of the diseased organ, and prevent the occurrence of any secondary affection due to disturbance of the skin's action.

The directions for the carrying out of this method are as follows: —A piece of bacon as big as the palm of the hand, and with the rind still attached, so as to make it easier to hold, is to be taken, and several cuts are to be made on its under surface. It is then to be vigorously rubbed over the whole of the patient's body, with the exception of the face and head, the application being commenced from the very first day of the disease, and repeated at least twice daily, in the morning and evening. Excepting the part which is actually being rubbed, the body of the patient must not be exposed during this treatment. The linen is not to be too often changed, and no water is to be allowed to touch the skin. The patient is to be kept in a moderately cool atmosphere, at a temperature of 60° Fahr. He is to remain in bed as short a time as possible, and to be limited to a sick diet only during the presence of fever, being allowed to go into the open air by the tenth day, reckoned from the beginning of the disease. The inunctions are, however, to be continued for full three weeks, without interruption, after which the use of warm baths is recommended.

It was Schneemann's opinion that by this procedure the disease is made to terminate with the disappearance of the rash, and that no desquamation occurs.

Although this mode of treatment has already undergone sentence of oblivion, and there have been very few who, like Mauthner and Illisch, have carried it into practice, yet I may, in this place, report the results of my own trials of it. I have carefully followed Schneemann's directions in the treatment of twenty children affected with scarlatina; but I regret to say that I have not seen those good effects which his laudatory statements had led me to expect. The procedure in question certainly did not prevent the appearance of complications, for in two of these patients *angina gangrenosa* set in; in one, diphtheritis; in two, pneumonia; and in two, dropsy. Nor did I find that this method checked the spreading of the disease by contagion, nor that it prevented the occurrence of desquamation. On the other hand, it is not to be denied that in some cases this treatment relieved the troublesome itching and burning sensations complained of by the patient, and that it removed the dryness and heat of the skin, and made it disposed to perspire. In fact, the benefit derived from rubbing the patient's skin with bacon is very similar to that of ablution with cold water.

CHAPTER X.

VARIOLA.

FEBRIS VARIOLOSA, BLATTERN, POCKEN, PETITE VÉROLE, SMALLPOX, VAJUOLO.

(CLASS IV.—ACUTE EXUDATIVE CONTAGIOUS DERMATOSES.)

Literature of Variola.

Avicenna, 'Liber canonis de Medicinis cordial.,' Venetiis, 1662.—*Rhazes,* 'De Variolis et Morbillis,' Londini, 1766 (Syd. Soc. Trans., Lond., 1848).—*Sydenham,* 'Opera,' sect. 3, edit. Batav., 1700 (Syd. Soc., 1844).—*R. Morton,* 'Pyretologia,' Amstelodami, 1699.—*Mead,* 'De Variolis et Morbillis liber,' 1747.—*Huxham,* vol. ii.—*Van Swieten,* 'Commentaria in H. Boerhaave Aphorismos,' tom. v, Lugd. Bat., 1772.—*Cotugno* (*Cotunnius*), 'De Sedibus Variol. Syntagma,' 1771.—*Borsieri* (*Burserius*), 'Institutiones Med. Pract.'—*De Haen,* 'Abhandlung von der sichersten Heilart der natürlichen Pocken,' Wien, 1775.—*Peter Frank,* 'De Curandis hominum Morbis,' Ticinæ, 1792, § 329.—*Friedr. Hoffmann,* 'Opera omnia Physico-medica,' Genevæ, 1740.—*Joh. Storch,* 'Abhandlung von Blatternkrankheiten,' Eisenach, 1753.—*C. L. Hofmann's* 'Abhandlung von den Pocken,' Münster u. Hamm., 1770.—*Sauvages* (*F. Boissier de*), 'Nosologia Meth.,' t. i, p. 422, Amst., 1748.—*Muhry,* 'Hufeland's Journal,' vol. xxviii, p. 1, and vol. xxx, p. 128.—*Stieglitz,* 'Horn's Archiv,' xi, p. 187.—*Petzholdt,* 'Die Pockenkrankheit mit besonderer Rücksicht auf die path. Anatomie,' 1836.—*Rilliet et Barthez,* 1843, ii, p. 430.—*Gregory,* 'Lectures on the Eruptive Fevers,' 1843.—*Williams,* 'Elements of Medicine,' 1826, i, 192.—*Eimer* (*Chr. H.*), 'Die Blatternkrankheit in path. u. Sanitätspolizeilicher Beziehung,' &c., Leipzig, 1853.—Consult, lastly, the works of the well-known dermatologists *Willan, Bateman, Alibert, Rayer, Cazenave, v. Schedel, Gibert, Devergie, Fuchs, Simon,* &c.

According to certain manuscripts preserved in the British Museum, which date from before the year 900 A.D., and in which the word Variola is repeatedly employed, the name applied at the present day to this disease seems to have been in use even before the time of Constantius Africanus, who is stated to have been the first physician acquainted with this affection, and to have given to it the name of Variola. It is, however, incontestable that this disease is of such extreme antiquity that the medical historian in vain attempts to fix the time of its first appearance. According to Moore, it existed in China and Hindostan even before the age of Hippocrates. Others, among whom are Freind, Mead, and Gregory, think that the earliest notice of this complaint is to be found in the writings of Procopius (A.D. 544). Bryce traces the first appearance of smallpox to the year 522, when it is said to have prevailed in the countries bordering upon the Red Sea. The earliest descriptions, however, which can be with certainty referred to this disease are those of the Arabian school, and particularly of Rhazes, A.D. 910.

It is said by some that the name Variola was coined by the monks, who, during the middle ages, were, as is well known, the representatives of learning, from the Latin word *varus* (a papule, pimple, or tubercle), which is to be found in Pliny. Others, however, derive this term from the Greek word αἴολος (*varius, variegatus*). The German *Pocke* means a bag or pouch.

When, at the end of the fifteenth century, syphilis was recognised, a disease of which the eruption in some cases resembles that of variola, it became necessary to have some means of distinguishing these affections from one another. This is the origin of the English term *smallpox*, and of the French expression *la petite vérole*.

All medical and also all lay writers upon variola have known that this disease is contagious. But the slight intercourse which formerly existed between different nations explains the fact that smallpox did not spread to any great extent before the eleventh century. Indeed, the most powerful agent in diffusing this disease was the Crusades, in the eleventh, twelfth, and thirteenth centuries; and during these wars it was brought from the East to the West. Its first appearance in Germany is referred to the year 1493, when it is stated to have been introduced from the Netherlands by the soldiers of the Emperor Maximilian I. After that time smallpox spread pretty rapidly, both in Europe and in America, and in these quarters of the globe claimed its victims by millions.

Certain epidemics, however, were found to have a benign character, and even in others some individual cases ran a favorable course. Hence, in the course of the eighteenth century the idea suggested itself to physicians that these mild epidemics and cases of smallpox might be employed to generate artificially a similar form of the disease in persons who had as yet escaped it: and this was the origin of the practice of inoculating variola. Eimer and others do, indeed, state that this operation was used in China, Circassia, and Africa, as far back as the eleventh century. But, in my belief, the earliest ascertained fact in the history of this practice is that in the year 1718 Lady Mary Wortley Montague, the wife of the English ambassador at Constantinople, allowed herself to be inoculated in that city with smallpox matter taken from the human subject. By this lady the practice was also introduced into England. From this country the method of protection against variola by inoculation spread to other parts of Europe; but met with only partial acceptance, for epidemics occurred as frequently as before, and the disease was, in fact, carried by it to certain regions in which it had previously not existed, or had but seldom shown itself. Hence, as the eighteenth century advanced, the practice of inoculating with the smallpox virus became less and less common, and at last it was forbidden in most countries, because statistical evidence showed that in spite of it more than half a million persons died annually in Europe from variola.

When we reflect on this great mortality we begin to appreciate at its right value Jenner's beneficent discovery of the protecting influence of the cowpox against variola. This discovery is, indeed, ascribed by some authors, not to Jenner, but to others, namely, either to Plett, of Holstein, a schoolmaster, or to Rabaut-Pommier, of Montpellier, a Protestant clergyman, in 1781, or, lastly, to Sutton and Fewster (who were inoculators of smallpox) in 1768. But to Jenner belongs undoubtedly the merit of having given incontrovertible proofs, not only of the prophylactic power, but also of the practical applicability, of vaccination.

Even since the introduction of this operation epidemics of variola have still appeared, although more rarely, and in a milder form than before. Hence those who maintain that the cow-pox affords an absolute protection have been led to suppose that there are other pustular diseases resembling smallpox very closely, but not identical with it. Moreau de Jonnès, in particular, held that the varioloids constitute an independent affection, which is quite distinct from smallpox, and against which vaccination affords no security. Dufan, Dubois, Paradis, Ebers, Neurohr, Küster, Strecker, and others, have adopted the same opinion. Again, varicella, which was first described by Heberden in the year 1766, has since the introduction of vaccination been asserted to be a form of variola, modified by that operation. It has, however, already been made apparent, as was even shown by De Haen as far back as 1775, that this disease existed long before the time of Jenner's discovery, and that its course was as mild then as it has been since the adoption of vaccination. The controversy whether variola is a single malady, presenting three different forms, or whether there exist two or three more or less similar pustular diseases, could only be settled by the production of evidence to show whether these affections are produced by one contagious principle only or by several.

It will have escaped no medical man who has had much opportunity of observing smallpox, that when several persons fall ill at the same time in one family, or even in one locality, the severity of the disease and the extent of the eruption vary greatly in different cases. In fact, we see in every epidemic instances of varioloid and varicella,[1] as well as of true variola. Hence the question may fairly be raised, "What contagious principle is it which, in these cases, generates the disease?" To be consistent, it would be necessary to admit the existence of more than one epidemic; to assume, in fact, the prevalence of varicella at the same time with smallpox and its modification, the varioloid. No experienced practical physician, however, would entertain this notion. Indeed, there is positive proof that varicella may generate variola or varioloid, and that, conversely, variola may produce, in another individual, varicella, independently of any influence due to previous vaccination. I have every year occasion to observe, that when a case of smallpox in any of its varieties presents itself in my medical clinique, several of the students, both vaccinated and unvaccinated, who come into contact with the patient, are attacked by the disease, and that under such circumstances the form which makes its appearance is by no means always the same as in the original case.

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[1] With reference to the statements which follow, it must be borne in mind by the English reader that Prof. Hebra's definition of varicella is entirely different from that to which we in this country are accustomed. By varicella, he simply understands a very mild form of smallpox, although it is at the same time true that he altogether disbelieves in there being any distinct disease, such as we suppose to exist and term varicella. For this reason, the criticism on Prof. Hebra's views, by Dr. Gee, in the 'System of Medicine' (1866, vol. i, p. 520) seems to me wide of the mark. Prof. Hebra denies that there is a separate disease such as we call varicella and, besides the cases to which we should give this name, he includes all cases of very mild smallpox under the same head, applying to them collectively the name varicella; and then he

In the General Hospital at Vienna, it sometimes happens that a person affected with variola or varicella is placed by accident among other patients in a room not specially devoted to these cases, and remains there for a few hours, or till the next day. This is often quite sufficient to infect one or more of those who, being ill of other diseases, lie in the same ward; and under these circumstances we often see several bad cases of variola vera generated by a patient affected only with a mild varicella. We have a still more striking proof of the same fact when the smallpox contagion is introduced among the newly born infants and children at the breast in the Foundling Hospital of this city. For we find that when this occurs cases of varicella and of variola vera make their appearance simultaneously, the former running a favorable, the latter an unfavorable course. The same thing is also taught us by the history of the inoculation of variola. For this purpose, no one used lymph taken from cases of variola vera; the contents of the vesicles of varicella, the mildest form of the disease, were certainly always employed, in order to prevent evil consequences. This surely is a proof that varicella has, within the memory of man, been the source of devastating epidemics of variola.

It may be inferred from what I have said that I believe variola to be one disease, and not to include two or three different maladies, though, like any other complaint, it may of course present different degrees of intensity. I apply, then, the name *variola vera* to the most severe form of this disease, that in which the eruption is abundant and the fever intense, and in which a fatal result is often observed. On the other hand, I use the term *varicella* for cases in which the rash is very scanty, and which run a favorable course, and always terminate in recovery. Between these

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says that such cases generate smallpox. To which it might be answered that, without doubt, *some* of the cases which Prof. Hebra calls varicella may propagate smallpox, but that it still remains a question whether such cases as would be called varicella here can do so.—[Ed.]

extremes lies the varioloid as a middle term, presenting an eruption moderate in amount, a course which is generally mild, and a successful issue.

The fact that the patient has previously been vaccinated does not at all influence me in applying one of these names rather than another to a particular case. For I have observed severe confluent smallpox, *variola vera,* in those who have been vaccinated; while, on the other hand, in newly born children who have not been vaccinated the disease sometimes takes its most mild and favorable course, so as to constitute what I term *varicella.*

Again, I cannot admit that any anatomical characters (such as the umbilicus, the cellulated structure, or the so-called pseudo-membrane of the pustules) are, as has been asserted by some, characteristic of true smallpox; nor do I regard the secondary fever, which has likewise been stated to occur only in the variola vera, as belonging to that form of the disease alone.

For if we, on the one hand, consider that the epidermis is a line in thickness, and consists of many layers, placed the one above the other, and that the fluid which gives rise to the smallpox vesicle is poured forth either by the vessels of the papillæ or by those which supply the follicles, and if we further trace attentively the development of the pustules themselves, we shall find that their anatomical structure is altogether different from that ordinarily supposed.

Thus, if we make either a vertical or a horizontal section of a variolous papule in the earliest stage, the summit of this papule is always found to consist simply of the most superficial stratum of the epidermis, having on its under surface a few softened epidermic layers of more recent formation. The contents at this time appear as a fluid presenting either no formed elements or only a small number of young epidermic cells, with a few pus-globules and blood-discs. If this operation is repeated on a vesicle which has undergone further development, the anatomical appearances are the same; or, at any rate, the only difference is that the number of pus-cells is found to be greater each day as the age of the vesicle increases. In no case do we discover any other pathological product, either adhering to the under surface of the roof of the papule or vesicle, or contained within its interior. The epidermic covering of one of these papules or vesicles, when cut off horizontally and placed beneath a low power of the microscope, is seen to be either discoid or of an annular form, according as its centre is or is not perforated by a hair. It is, therefore, at once obvious that smallpox pustules develope themselves both round the mouths of the hair-sacs and also in the interfollicular spaces. When the smallpox papule has passed into a fully developed vesicle, this will yield only part of its contents when pricked on one side and subjected to pressure. The whole of the contained fluid can be evacuated only by removing the roof of the vesicle or by puncturing it laterally at several points. This fact, indeed, has long been known, and in the case of the vaccine vesicle has often been turned to practical account. It was this which gave rise to the notion that the smallpox or vaccine vesicle contains in its interior a number of dissepiments by which its cavity is divided into as many chambers. Any one may, however, convince himself that this is not the case by cutting off one half of a vesicle and raising it with a pair of forceps. Under these circumstances the separate compartments would, of course, be seen, if they existed. I think, however, that I can account in quite a different way for the fact that the contents of the vesicle are only partially evacuated when a lateral puncture is made, and that I shall be able at the same time to explain the development of the umbilicus and the nature of the so-called pseudo-membrane.

We have seen that when the smallpox eruption begins to make its appearance a fluid is poured out either by the vessels of the papillæ or by those of the follicles. This fluid, which may be termed a blastema, an intercellular fluid, or an exudation, appears as a minute drop. It is on all sides met by the epidermis, and, as I have already fully explained,[1] is compelled to permeate the substance of this tissue. Now, if the *vis premens a tergo* should continue to urge this drop of fluid forwards, it will, after traversing the different softer layers of the cuticle, at last reach the external horny stratum. This, being less capable of imbibition, will oppose to the fluid a greater resistance, and, therefore, will become raised above the surface, so as to form a papule, which will afterwards (when the exudation has increased in quantity) pass into a vesicle.

Now, if the fluid be poured forth by the vessels of a papilla into an interfollicular space, the papule (and afterwards the vesicle) will be semiglobular in form, and will present no central depression.

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[1] See the footnote to p. 7.

But if, on the other hand, vessels supplying a hair-sac yield the formative material, this will penetrate directly the layers of epidermis lining the sac and forming the root-sheath of the hair, and will thus cause a swelling of this substance. Now, that part of the root-sheath which immediately surrounds the hair receives support from it; whereas the external root-sheath, which comes next in order, is less firmly adherent, and will first be detached by the effused fluid. Hence these outer layers will become raised above the surface of the skin more than the central one, and will form round the hair an elevated ring, which can be plainly recognised, even on the first appearance of the eruption, when it is still papular. As the quantity of fluid augments, and the papule becomes a vesicle, this ring also will increase in size; and even when the contents have accumulated to such a degree as to raise the centre of the vesicle also above the level of the skin, there will still remain indications of the original funnel-shaped depression, which will then, in fact, form the umbilicus. Now, I have already shown that whether a smallpox papule is or is not developed round the mouth of a hair-sac, the epidermis is in any case the recipient of the exudation which is poured out; hence the vesicle never consists of a simple cavity, filled with liquid contents, but is always made up of a mass of epidermic cells, *infiltrated* with an exuded fluid. The different strata are, indeed, so loosened by the exudation that their texture might be compared to that of a grape (in which we find the juice infiltrating the vegetable tissue in a similar manner), or of the substance which is named by Virchow the mucous tissue, and of which we have examples in the vitreous body and in the jelly of Wharton. This explanation enables us to understand why, when one side of a smallpox pustule is punctured, only a part of the fluid escapes, so much of it, in fact, as is mechanically pressed out from the epidermic layers immediately adjacent to the track of the puncture. The supposed cellulated structure of these pustules, in fact, turns out to be merely the result of the infiltration of the different strata of the cuticle with the fluid.

That this is a correct explanation is proved by the fact that the umbilicus is to be seen, not in smallpox only, but in all other cutaneous diseases in which vesicles and pustules are developed, provided only that the anatomical conditions and the mode of origin of the eruption are analogous to those which obtain in variola. Indeed, even the presence of an exudation is not essential to the production of the umbilicus. An accumulation of sebum, particularly if this remains long fluid, as in the affection described[1] under the name of Comedonenscheiben, and in the *Molluscum contagiosum*, is sufficient to give rise to an appearance very similar to that of the eruption of smallpox.

As the quantity of pus-globules contained in the fluid of the variolous pustules increases, we find that the number of epidermic cells in this fluid undergoes diminution, by what Virchow terms the process of "cellular substitution" (Zellensubstitution). Indeed, these cells at last almost totally disappear, and the contents of the smallpox pustules then consist wholly of pus, with a few scattered blood-discs.

At this time there is observed beneath the roof of certain of the pustules, and occupying the exact centre of its under surface, a white discoid substance. This, however, cannot be detached; and careful microscopical examination shows that it is made up solely of epidermic cells, and is not, as might be supposed, an inflammatory membrane. This white substance, in fact, appears to arise either from the greater maceration of the epidermis at this point, or from an accumulation of those cells which at first lined the hair-sac and formed the root-sheath of the hair, and afterwards have become pressed mechanically against the roof of the pustule by the fluid now in great part converted into pus.

Hence it will not seem extraordinary that I should declare the umbilicus and the so-called pseudo-membrane to be, in reality, met with both in varicella and in varioloid, as well as in the variola vera. The fact that these appearances are most frequently observed in the last-mentioned form of the disease depends only upon the greater length of time occupied, in cases of variola vera, in the formation of the pustules. Indeed, I may lay it down as a rule, that if only an eruption be seated at the mouths of the hair-sacs, the slower its development the more certainly will an umbilicus be present; and that the more quickly vesicles or pustules are formed the more perfectly spherical will be their shape, especially when they occupy the interfollicular spaces.

Again, it is stated that the secondary fever (Eiterungsfieber, Eiterungsstadium, *Stadium suppurationis*) belongs only to the *variola vera*.

But, from what has already been said, it will be apparent that pustules are, in the end, developed in each of one of the forms of smallpox. Now, in this, as in any other disease, the pus so formed necessarily exerts upon the surrounding structures an irritant action, which will be severe in proportion to the number of these little subepidermic abscesses. By the accumulation of these separate irritations a disturbing influence is, of course, exerted upon the whole skin, and also upon the system in general. The red blush (halo) round each pustule is, in fact, caused by the action of the pus contained in its interior, and is a visible proof of the irritation which is set up by that fluid. Now, partly as a result of this condition of irritation, but, no doubt, still more as a consequence of the admixture with the blood of particles derived from the contents of the pustules, there arises a general morbid state, manifested by acceleration of the pulse and increased heat of skin —in short, by those symptoms which we group together under the name of fever. This condition generally sets in after the tenth day of the disease. According to what I have stated, it cannot, *sensu strictissimo,* be said to be caused by the disease itself, but is rather due to the presence of pus at so many points beneath the epidermis. Hence, it does not belong to the *variola vera* alone, but will present itself in all cases in which accumulations or foci of pus (Eiterherde) exist, and in which purulent absorption has taken place.

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[1] v. p. 130.

But, although I dispute the validity of the distinctions hitherto accepted between the different forms of variola, I have yet endeavoured to find other characters by which these three varieties might be distinguished at the bedside; and in doing this it has been my object to retain both the names previously used and also the meaning which has been generally attached to them. Now, a careful observation of the course of the different modifications of smallpox shows that, in general, the number of the pustules is directly proportionate to the duration of the disease. Thus, the *variola vera* takes the longest time for its development and involution, a space of four weeks being the minimum period within which this variety of the complaint comes to an end. On the other hand, *varicella* runs the most rapid and most favorable course, for which fourteen days at most are required; and cases of the intermediate variety take, on an average, three weeks in passing through their stages. These differences give us the means of practically distinguishing the different forms of smallpox on a basis capable of being expressed in numbers. Thus, I apply the term *varicella* to those cases only which require fourteen days or less for their completion; to those which terminate in the third or fourth week I give the name of *varioloid*; and, lastly, I reserve the title of *variola vera* for those which run a course of four weeks or longer.

Variola or smallpox Pocken, Blattern presents, in general, the following characters:—It is contagious, runs an acute course, is attended with fever, and leads to the formation of numerous vesicles and pustules over the whole surface of the skin.

How long the disease may remain dormant in the system before it breaks out cannot be stated positively of variola, any more than of any other of the exanthemata. In the majority of cases fourteen days elapse between the time of infection and the first appearance of the febrile symptoms which are the precursors of the eruption. But instances are recorded in which it was clearly shown that the interval was much less than this; and there have been other cases in which the affection broke out at a far later date after the occurrence of infection.

In works on smallpox we find references to many cases tending to show that the disease can be communicated by the lower animals as well as by man, and that even articles of clothing or furniture may be sources of contagion. But it is very difficult to determine whether these statements have been thoroughly weighed.

It is well known that during the period of incubation of variola persons feel perfectly well. This is, indeed, sufficiently proved by the fact that they do not place themselves under medical care until the febrile symptoms make their appearance.

Now, since the three varieties of smallpox which I have named differ greatly in their duration, I am compelled to take one of these forms as representing the normal course of the disease, from which the others deviate. For this purpose I shall make use of the *variola vera*, as being the most severe variety, and the one in which the eruption is most abundant. After describing the normal course of this form of smallpox I shall pass on to the special consideration of its modifications, including those which present still greater intensity and malignity, as well as those which run a more favorable course. This will afford me an opportunity of giving an account of both the varioloid and varicella.

The normal course of Smallpox (Variola vera regularis, benigna; Febris variolosa erethica).

I. *The Stadium Prodromorum.*

The *febrile symptoms* which attend the early stage of smallpox present nothing peculiar in this any more than in the other acute exanthemata. The first appearance of the fever is, indeed, generally sudden, and it displays a great intensity. This is particularly the case in children, in whom (besides the acceleration of the pulse, the flush on the face, and the wandering speech) convulsions are frequently observed, so that the disease sometimes simulates the commencement of typhus or meningitis. It must, however, be admitted that in some cases the febrile symptoms are at first exceedingly slight. The only distinctive character of smallpox in this stage of the disease (if, indeed, any character can be said to be distinctive during this period) is the presence of pains about the joints and over the sacrum, and also, in some cases, at the scrobiculus cordis. These pains are often very severe, so that we are not rarely led into error when the patient asserts that he has received some injury, of which, however, no sign can be discovered on examination of the part which is the seat of his suffering.

As a rule, the mucous membranes present no morbid appearances during this stage of smallpox, nor does the patient experience any subjective sensations referable to these structures. But in cases in which the mucous surfaces are afterwards severely affected these are sometimes, from the very first, reddened and swollen; and the patient, perhaps, complains of a sore throat or a catarrhal affection.

The violence of the symptoms during this period of variola does not stand in direct ratio with the severity of the subsequent disease. For, on the one hand, early febrile and concomitant symptoms of an intense kind not infrequently precede an eruption which is very slight; and, on the other hand, the *Variola vera* itself is by no means invariably ushered in by a severe *stadium prodromorum.*

The average duration of this stage, throughout which the fever is constantly on the increase, may be stated to be, in adults, about three days. In children it often happens that no striking symptoms make their appearance in the course of this period, so that the disease is not rarely overlooked, and the eruption then takes one altogether by surprise.

In certain cases *exanthematic symptoms* present themselves during this period of the disease in the form of the *Roseola variolosa* or *Erythema variolosum*. This rash has already been described among the symptomatic active hyperæmiæ (vide page 56).

II. *The Stadium Eruptionis.*

Febrile symptoms.—As soon as the variolous eruption begins to break out the intense febrile symptoms generally decline, the heat of the skin, delirium, and drowsiness subside, and convulsions are no longer observed.

It is only in very severe cases, and generally in the malignant ([illegible]) form of the disease, that a remission of the febrile symptoms does not occur when the rash makes its appearance.

Consensual symptoms.—The pains in the joints and along the spinal column diminish, and may even altogether disappear; nor do any of the other concomitant symptoms present any great intensity, except in very severe cases, in which the mucous surfaces are affected by the disease.

Exanthematic symptoms.—The spot at which the rash first makes its appearance is not in all cases exactly the same; but in the so-called [illegible] the eruption is always first observed on the face and on the hairy scalp, only a few scattered papules being seen on other parts of the body.

The efflorescence [illegible] in the following manner:—In the regions [illegible] those points which are the seat of [illegible] sebaceous glands, there arise numerous papules [illegible] slightly reddened, and distinguishable [illegible] The patient at the same time [illegible] slight itching. In the [illegible] increase in number; but, however [illegible] remain isolated, and [illegible] The [illegible] during this stage presents a [illegible] observed in the papular form of measles, so that it may for a time be impossible to determine whether the case is one of morbilli or variola. It is only after the termination of the second day of the eruption, or the fifth day of the disease (reckoned from the commencement of the *stadium prodromorum*), that smallpox presents characters by which it can with certainty be recognised.

III. *The Stadium Floritionis.*

During this period the *febrile symptoms* diminish in proportion as the eruption passes from the papular into the vesicular stage, and by the fourth, fifth, or sixth day of the disease they have often altogether disappeared. On the seventh day, however, when the contents of the vesicles begin to become purulent, there is an exacerbation of fever, and from this time up to the eleventh day it steadily advances, so as generally to reach its height (the *stadium acmes*) between the ninth and eleventh days.

If on the eleventh day of the disease the constitutional symptoms do not subside, they then assume that form which we are accustomed to see in the (so-called) pyæmic affections. The fever, in fact, acquires an intermittent character, presenting a severe cold stage, followed by intense heat of skin of greater or less duration. This febrile state has long been known under the name of *secondary fever* (Eiterungsfieber); it appears just when pus is formed within the smallpox vesicles, and has, in consequence, been erroneously looked upon as the cause of this change in their contents; whereas it would certainly be more correct to regard it as the effect of a subsequent absorption of pus into the blood. Careful observations of the pulse, continued over a long period, show that variola reaches its height in 53 per cent. of the cases on the tenth day of the disease, the pulse being then 100—140 in the minute. In twenty-nine out of a hundred cases the ninth day is the one on which the pulse attains its greatest rapidity, and in the remaining 18 per cent. the highest intensity does not occur until the eleventh day.

Concomitant symptoms.—Of these I must especially mention sleeplessness, which, indeed, always continues until the disease has reached its height.

Exanthematic symptoms.—It is during this period, which lasts six or seven days, that the smallpox eruption presents the stage in its development most characteristic of the disease. For on the sixth day the papules begin to pass into vesicles; during the seventh and eighth days these everywhere increase in size; and on the ninth or tenth day their hitherto transparent contents become yellow and purulent, a transformation, which, however, does not occur before the eleventh or twelfth day in the vesicles which are found on the limbs, where the eruption appears later than on other parts of the surface.

When the pustules are very numerous they of course lie close to one another, and this involves a swelling of the intermediate tracts of skin which are not themselves occupied by the eruption. Moreover, from the tenth day of the disease onwards each pustule becomes surrounded by a red ring (the so-called halo). These changes produce an extreme disfigurement, especially of the face; the eyelids become closed by œdematous swelling; the nostrils are plugged up; the lips protrude outwards. Of the other parts of the body, where the pustules are developed a day or two later, those which become most swollen at this period of variola are the hands and the feet (and particularly the soles); and, when the epidermis of these regions is thick, severe pain may thus be produced.

Although the smallpox eruption is generally pretty uniformly distributed, it yet has a predilection for certain parts of the skin. These are, first, the face and the scalp (where the pain is also generally most severe), next the upper extremities and the trunk, then the lower limbs and the genitals, and, lastly, the abdomen. This region is often the seat of very few pustules, even when they are elsewhere tolerably numerous.

The previous occupation of the patient exerts a marked influence upon the number of pustules present at certain spots. Thus, in maid-servants, and in men and women who practise certain handicrafts (Handarbeiter und Handarbeiterinnen), the hands are apt to be kept in a state of irritation by the action of soap or alkaline lye, or some similar substance; and when this is the case, the hands present a more abundant crop of pustules than usual. So, also, any part of the body round which a belt or garter, stays, or even the coat or gown, or any other article of clothing, has been tightly fastened, or which has been for some time subject to considerable pressure from a truss or bandage, is generally covered with the smallpox eruption. Again, the buttocks of persons of sedentary habits, any parts of the skin which have been exposed to irritation from sinapisms or blisters or other local applications, and, lastly, any spots which were the seat of eczema or any other exudative affection before the appearance of the variola—all such parts present numerous pustules, and may even be covered with confluent eruption, although this is quite scanty in other regions.

On the other hand, in cases of ichthyosis or prurigo the opposite of this is observed. In persons affected with either of these diseases the smallpox efflorescence appears only on the flexures of the joints and on the genitals, and face; in other words, on those parts of the skin which were previously healthy.

IV. *The Stadium Exsiccationis seu Decrustationis.*

Febrile and concomitant symptoms.—When the disease runs its normal course the febrile symptoms come to an end on about the thirteenth day. The pulse is now generally about 80 and 90; sleep, which has been absent from the beginning of the malady, is again enjoyed; the appetite becomes sharp; the patient feels comfortable, and complains of nothing but the eruption on his skin.

Exanthematic symptoms.—Some of the pustules seated on the face first lose their fluid contents by desiccation and absorption, and become converted into a brown solid mass—in other words, into a crust. On each succeeding day the same change extends to pustules which were later developed; and, sometimes, it may even affect a large number of them simultaneously, so as to produce a great alteration in the appearance of the patient. For, as the eruption dries up, the swelling of the skin gradually subsides, and the redness round the individual pustules disappears. The tension and pain produced by the presence of so severe and extensive an efflorescence daily undergo diminution. The eyelids, so long closed, are again opened, and the globe of the eye is found to be uninjured. The plugged-up nostrils are rendered pervious by the removal of the accumulated crusts; the lips can again be brought into contact; and, except when the mucous membrane of the mouth was somewhat severely affected by the disease, there is no longer an excessive secretion of saliva or mucus.

The order in which the pustules undergo involution and decrustation is the same as that in which they are developed. Starting from the face, these changes gradually spread over the whole body. It is, however, to be noted that desiccation occurs on the hands and feet, and particularly on the palms and soles, earlier than on other parts of the limbs. Moreover, the crusts which form on the hands and feet present the peculiarity that they are solid lentil-shaped bodies, as it were encapsuled within the epidermis. Thus they differ essentially in their form, as well as in their brownish-black colour, from the crusts which are to be seen on the other regions of the body.

By the end of the fourth week these crusts everywhere become detached from the surface of the cuticle; which, in the mean time, undergoes regeneration. They may leave behind them either mere deposits of pigment, or scars, which will be more or less marked, according as the pustules were originally seated in the deeper structures of the skin or occupied a more superficial position.

Anomalies in the course of Variola.

In the severity of the cutaneous affection which accompanies it, smallpox presents greater varieties than any other of the exanthemata. This fact has long been observed, and was doubtless the origin of those subdivisions of the disease which have in every age been recognised. Thus, variola was at one time distinguished into a mild and a severe form; and, at the present day, three varieties of this disease are generally admitted, namely, *Variola vera*, the *Varioloid*, and *Varicella*. It would, in reality, be difficult to say which of these three forms constitutes the *normal course* of the disease. I shall, however, follow the usual practice (which also accords with that adopted in the other exanthemata) of regarding as typical the benignant variety which mostly terminates in recovery; so that I shall reckon as modifications of this type both the more severe and the milder forms of variola.

I certainly might, in this matter, follow the example of Sydenham, Boerhaave, Sauvages, and others, who distinguished merely two forms of this disease, a benign and a malignant—the *Variolæ discretæ* and the *V. confluentes*. There are, however, important objections to such a division, and among them the fact that some cases of discrete smallpox run a malignant, some cases of confluent smallpox a benign, course. I therefore prefer to make use of the terminology ordinarily employed, and shall retain the three varieties of which I have already given the names.

The most numerous irregularities are undoubtedly met with in that form of smallpox which was formerly termed the *Variŏla confluens,* and has more recently received the name of *Variola vera.*

These anomalies in the course of the disease make their appearance in its later stages rather than in the *stadium prodromorum* which has for the most part a uniform duration of three days, and presents in each variety of smallpox the same intensity. In the *stadium eruptionis,* however, we find that the more numerous the papules the more slowly are they developed; and the conversion of the papules into vesicles, and of these again into pustules, is likewise retarded, so that in cases of *Variola vera* we have to allow two days for this stage, whereas in the Varioloid it is only of twelve or, at most, twenty-four hours' duration, and in Varicella it often does not last more than a few hours, so that it may easily be altogether overlooked.

The *stadium floritionis,* again, occupies a week in cases of the *Variola vera,* while in those which are of less intensity it does not take more than half that time.

In regard to the distribution of the pustules, and the order of succession in which they are developed, it may be observed that in the *Variola vera s. confluens* the eruption appears first on the face and afterwards spreads over the surface of the body in the anatomical order, but that in the other forms it as often breaks out first on the skin of the trunk as on that of the face.

Lastly, the length of the period of decrustation is also proportionate to that of the *s. eruptionis* and the *s. floritionis.* The more numerous the pustules the more time will be required for their complete conversion into crusts.

It is obvious, then, that in severe cases Variola extends over a longer period than the four weeks which I gave as the normal limit of its duration.

The *concomitant symptoms* vary with the number of pustules. The swelling of the skin, the annoying sensation of tension, sometimes even amounting to pain, the closure of the eyelids, the permanently open state of the mouth, the suffering with which every movement is accompanied, the uneasiness caused by the recumbent posture, and, lastly, the pains experienced in the hands and feet, particularly in the latter, when covered with a thick horny cuticle—all these symptoms become aggravated as the quantity of pustules increases, and as their development advances.

On the other hand, those cases of smallpox in which the eruption presents the mildest possible form take a very different course. Under these circumstances febrile disturbance is often altogether absent (*Variola apyretica*), and the patient is also quite free from pain; indeed, if the scanty efflorescence on the surface of the skin did not indicate, by its characteristic form, the nature of the disease, his sensations would not lead him to suspect that he was suffering from smallpox. Cases even occur in which the consecutive decrustation is the first thing which enlightens either the patient or the physician as to the nature of the complaint, and in which it would, indeed, be impossible to make a diagnosis if smallpox were not epidemic, or if, at any rate, other patients in the same district did not, at the time, present unmistakable symptoms of the disease.

In several cases, even in the confluent form of smallpox, I have observed a modification which is very welcome to both the patient and the physician. This consists in the sudden subsidence of the complaint on the tenth day, the eruption having previously passed through the usual changes, and being then in a state of full development. Decrustation, in fact, at once commences, and goes on so rapidly that in the course of a few days all the pustules are converted into brown crusts. This renders the course of the disease extremely favorable in every respect, and also much shorter than usual, not lasting more than three weeks. Hence, such cases, although at first set down as *Variola vera*, are brought into the group of the Varioloid affections by the rapidity with which decrustation occurs.

Irregular Forms of the Rash.

Writers have described numerous varieties of the smallpox eruption, to which they have given appropriate names. Thus, we meet with the following terms:—*Variola papulosa* (*Nirlus*, Alibert), *conica*, *acuminata*, *globosa*, *globulosa*, *verrucosa*, *tuberculosa*, *cornea*, *siliquosa*, *fimbriata*, *miliaris*, *crystallina*, *lymphatica*, *vesiculosa*, *pemphigosa*, *pustularis*, *rosea*, *morbillosa*, *carbunculosa*, &c. These varieties, however, are all of such trifling importance that it is needless to give a further description of them, especially as those who may desire to distinguish them will find that the epithet attached to each sufficiently indicates its appearance. Indeed, what I would principally insist upon is that the cause of these differences in the size of the pustules, and in the form of the eruption, lies in the fact that the pustules, which are always at first small, sometimes retain the same form throughout their whole existence; whereas in other cases they blend together by twos or threes, thus acquiring a much greater size; and in yet other instances a large number of them coalesce, so that the eruption presents the modification known as the *Variola corymbosa,* or even that a sort of bleb is formed (sie blasenähnliche Efflorescenzen bilden).

I must also not omit to mention that smallpox pustules group themselves in those lines which (as we learn from the admirable investigations of Professor Voigt[1]) are indicated by the arrangement of the hairs on the different parts of the surface (Haarwirbel), which arrangement itself ultimately depends on the distribution of the cutaneous nerves. As an illustration of this, I may just refer to the fact that on the trunk the pustules are disposed in lines running in the direction of the ribs, and that about the nipple they are placed in semicircles, arranged more or less concentrically round it.

Far more important than those of which I have been speaking are the varieties of smallpox in which there is an altered state of the contents, or rather (strictly speaking) of the *base* of the pustules. Sometimes, for instance, either quite early in the disease or during its later stages, the eruption displays a bluish-red or black colour. This is always a proof that extravasated blood is present, in addition to the usual serous or purulent fluid. Now, if this appearance is presented by only a few of the vesicles or pustules, it merely renders the part tender or painful, and in this form it is not peculiar to variola, being observed, for example, in *Herpes zoster* also. On the other hand, it is always a bad sign to find that the base of all or even many of the vesicles is infiltrated with blood, or that they are filled with a bloody serum. This variety of the disease has been termed the *Variola hæmorrhagica seu nigra,* the latter of these epithets being given to it chiefly because, in the *stadium decrustationis,* all the crusts assume a black colour.

This, too, is the proper place to mention another modification of variola, that in which the only manifestation of the disease is the

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[1] 'Abhandlung über die Richtung der Haare am menschlichen Körper,' von Dr. Chr. Aug. Voigt, Prof. d. Anat., Wien, k. k. Staatsdruckerei, 1857. 'Beiträge zur Dermatoneurologie, nebst der Beschreibung eines Systems neuer Linien an der Oberfläche des menschlichen Körpers,' von demselben, ibidem, 1864.

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formation of hæmorrhagic spots. Such cases do not at all resemble those of ordinary smallpox, and, in fact, it is only during an epidemic that we can positively determine them to be due to the variolous poison. Their course is as follows. After febrile symptoms, which set in suddenly and with great severity, and are attended with delirium, or sopor, or with convulsive movements, cramps, &c., there appear on the skin a large number of hæmorrhagic (blutig suffundirter) spots, of the size of millet-seeds or lentils. These spots rapidly increase in size, become more and more numerous, and, within forty-eight hours, generally cover the whole surface of the body. Such cases always terminate fatally, and, for the most part, within from three to five days after the commencement of the disease. On post-mortem examination all the mucous membranes and the fibrous and serous tissues are found, like the skin, to be infiltrated with blood. Moreover, the parenchymatous organs, such as the lungs, heart, liver, and spleen, are in a similar condition; indeed, the spleen is often so soft that it looks like nothing but a mass of blood enclosed in a fibrous capsule.

Although this form of smallpox is now of very rare occurrence, it appears to have been much more common before vaccination was introduced, and especially in certain epidemics; and it was then known under many different names (*Blutfleckenkrankheit, Purpura febrilis, Schwarzer Tod*).

Varieties of Smallpox due to the presence of other cutaneous affections, or of diseases of internal organs.

A. *Coexisting diseases of the Skin.*

(*a*) *Rupia variolosa.*—In certain cases of variola each crust becomes surrounded, in the course of the *stadium decrustationis*, with a small vesicular ring (Blasenwall), containing a puriform fluid. This appearance is observed especially on the surface of the thorax; it arises on the fifteenth day of the disease, or a little later, and is attended with a renewal of the febrile disturbance. The central crusts, with the vesicles round them, present a great likeness to a *Rupia syphilitica*, and the more so because after a few days, when the fluid contained in the first-formed ring has dried up, this becomes surrounded by a second; this again, still later, by a third; and so on. In fact, the crusts produced in this way sometimes cover a surface of an inch in extent. It appears to me that this remarkable modification of the smallpox eruption may be appropriately termed a *Rupia variolosa.*

(*b*) *Impetigo variolosa.*—In other instances a consecutive suppuration appears, not round the crusts formed from variolous pustules, but in the intervening spaces which were free from the efflorescence. Thus, there appears a second pustular eruption, which might almost be regarded as a second smallpox eruption, were it not that the pustules have a different form, and take a different course. In fact, they resemble rather those of the common pustular affections, and therefore this affection may be called the *Impetigo variolosa.*

Both this and the preceding affection are to be regarded as representing *metastatic* deposits, as also are those which I have next to describe.

(*c*) *Furunculosis, abscesses, pseudo-erysipelas.*—In some cases such deposits appear as furunculi, or in the shape of abscesses or small subcutaneous collections of pus, or are even still more deeply seated, taking the form of pseudo-erysipelas or inflammation of the areolar tissue. This last affection has the more claim to a special description because it is among the most dangerous of the complications of variola. It generally sets in about the end of the third week; the patient first complains of pain in particular spots, which are extremely tender, and sensitive to the slightest pressure. Neither the eye nor the touch of the physician would as yet be able to discover any morbid deposit at these points; but, a few days later, they are found to be swollen and œdematous, and soon afterwards fluctuation, which is sometimes indistinct, can be detected by the finger. If an incision is made into one of these painful spots there escapes, even at this time, a large quantity of pus, of which the amount seems quite out of proportion to the size of the swelling. These forms of cellular inflammation are met with especially on the upper arm and on the other limbs; they are less common on the trunk. The swelling may be of the size of a pigeon's egg, or may reach a diameter of 12″ or even more. Indeed, in some cases the skin of a whole limb, or of the whole back or chest, becomes undermined by these accumulations of pus, so as to form the roof of a single enormous abscess.

(*d*) *Gangrene.*—This complication is of still worse augury than those of which I have been speaking. Gangrene may either be consecutive to pustules, furuncles, cellular inflammations, or abscesses, or it may arise directly by the formation of a bleb which is filled with bloody serum, and has a base infiltrated with blood. It then rapidly spreads to the adjacent parts. The blackish-brown eschar thus formed becomes detached after several days, exposing a loss of substance of greater or less extent. Sometimes, indeed, all the soft parts are destroyed over a larger or smaller area, so that the bones are laid bare. It appears almost incredible, but it is a fact, that these patients sometimes live on for several weeks, with their bones, so to speak, dissected out; ultimately, however, they almost all sink. Gangrene is a complication which appears especially in certain epidemics of variola.

[illegible] *Diphtheritic process.*—When any part of the skin has been deprived of its epidermis (as, for instance, by the application of a blister) either just before or during the early stage of a severe attack of smallpox, it sometimes happens that the denuded spot becomes covered with a diphtheritic membrane, which is at first white, but afterwards acquires a brown appearance. This pellicle is a line in thickness, tough and leathery, and so firmly adherent to the subjacent cutis as to be absolutely inseparable even by force. Its appearance is attended with febrile symptoms, and is certainly not to be regarded as a favorable sign. If, however, the disease should take a benign course, the diphtheritic membrane gets surrounded by a suppurating border, and gradually becomes undermined by pus, so that it separates in the form of a thin slough. The loss of substance which remains is replaced by healthy granulations, and the wound heals, leaving behind it a scar.

[illegible]

These mucous surfaces which can be seen during life, and particularly [illegible] are very frequently [illegible] becomes reddened and swollen [illegible] For the [illegible] of these parts being constantly bathed with fluid, and being far more delicate than the cuticle of the skin, the smallpox efflorescence does not on the mucous surfaces give rise to firm vesicles, filled with fluid, such as are seen upon the integument; on the contrary, the contents of the vesicles at once escape, in consequence of the maceration of the epithelium and the shedding of its most external lamina; and in this way the appearance just described is produced.

Moreover, the surface of the mouth and the salivary glands secrete a quantity of fluid proportionate to the number of the vesicles. The secretion thus formed may sometimes be so profuse as to constitute a serious degree of salivation. This adds another severe trouble to the many which afflict the patient, who now lies day and night with open mouth, from which large quantities of saliva are continually flowing.

The mucous membrane principally affected is sometimes that of the lips, sometimes that of the cheeks, the tongue, the soft and hard palate, the throat (particularly its posterior wall), or the larynx. Corresponding to these differences, there is in some cases considerable swelling of the lips, while in others the movements of the tongue are much impaired. This organ often appears thick and swollen, and protrudes between the lips, and its tip, which is thus exposed to the air, becomes covered with a dry brown coat (*Glossitis variolosa*). In some instances, again, there is difficulty of swallowing, or hoarseness; or, if the mucous membrane of the nose is likewise affected, the nostrils become plugged by the crusts which are formed, and this interferes with the respiration.

Except in children, these symptoms are not attended with the dangerous consequences which we should, at first sight, be inclined to attribute to them. Indeed, they subside altogether long before the eruption on the skin undergoes decrustation; they give rise to no further troubles, and lead to no sequelæ. Hence, by the time that the other symptoms of the disease begin to decline the affections of the mucous membranes also cease to annoy the patient, and present no obstacle to his taking nourishment.

In children, however, the case is different. In newly born infants a severe affection of the surface of the mouth and throat is one of the most dangerous complications of variola, because the child is thereby rendered unable to suck, and is consequently condemned to starvation.

It is well known that the smallpox efflorescence sometimes extends along the mucous membranes which line the internal organs, passing, for example, into the air-passages as far as the ramifications of the bronchial tubes, or into the œsophagus, or, again, from the anus upwards as far as the commencement of the rectum. In examining the bodies of smallpox patients after death we often find, on other parts of the mucous membranes, small erosions and ulcers resembling those seen in persons who suffered from diarrhœa, but never appearances which are identical with those met with on the mucous surfaces previously named.

To what extent the auditory passage takes part in the variolous process cannot be positively stated. Even when the disease is at its height, and when the pinna and the external auditory meatus are considerably swollen, the patients invariably hear pretty well, and answer the questions put to them.

c. *Diseases of the Eye.*

Although the structure of the conjunctiva is, of course, analogous to that of the mucous membranes, it is only in very exceptional cases that we find this surface affected by smallpox. Indeed, the ocular conjunctiva is never extensively involved; and we at most find a very few pustules on the margins of the lids, close to the roots of the eyelashes and the apertures of the Meibomian glands. The membrane covering the eye may now and then display a pustule of the size of a pin's head, very superficial and filled with a yellow fluid. This, however, quickly bursts, being macerated by the conjunctival moisture, and is not followed either by an excoriation of any size or by any disease of the subjacent structures.

When we compare the results of observation at the present day, with the descriptions given in the older works, it appears quite inexplicable that so much should have been writen in these books concerning variolous inflammations of the eye. For I can positively assert and prove from the records of more than 5000 cases of smallpox that even the superficial pustular affection which I have been describing has occurred only in 1 per cent. of these cases, and has never caused any, even transient, injury to, or disfigurement of, the eye itself. And I may at once say that this result was not due to any prophylactic treatment applied to the eye itself, by which the formation of pustules on the ocular conjunctiva was checked. Indeed, as I shall hereafter show, I have found no necessity for any kind of treatment, whether prophylactic or curative, and therefore I have given no medicine to the smallpox patients under my care.

I do not, however, mean to assert that variola can never, under any circumstances, imperil the organ of vision. But when this does occur it is the result, not of an ulcerative action extending from the surface to the deeper parts, but of the formation of metastatic deposits within the eye. This affection I shall hereafter describe among the sequelæ of smallpox.

D. *Diseases of Internal Organs.*

Various complaints come under this head; among them are diseases of the lungs, such as lobar and lobular pneumonia, and intestinal disorders, including diarrhœa and dysentery. These affections, however, are attended by no symptoms other than those which are well known as belonging to their ordinary forms, and therefore no further description of them is necessary.

Sequelæ of Smallpox.

I apply this term to those diseases which are called into existence directly by the variolous process, and remain as a continuation of it when the exanthem itself has passed off.

Among the cutaneous affections which come under this head are, first, *seborrhœa* and *acne.*

We find from observation that even while the crusts formed by the drying-up of the smallpox pustules are still adherent to the skin accumulations of sebum frequently occur beneath them, occupying, in fact, the mouths of the hair-sacs, which have again become patent. In some cases these masses of sebaceous secretion, being attached to the under surfaces of the crusts, interfere with their separation. In other instances, again, they remain within the ducts, and appear in the form of comedones after the crusts have fallen off. Or, lastly, they may even become raised above the surface of the skin, covering it with a grayish-yellow pellicle if the variola was confluent, but appearing as isolated warty elevations after the distinct form of the disease. The first of these varieties is a *Seborrhœa* *sicca, seu squamosa;* the other constitutes the *Variola verrucosa* (warty pocks).

In other cases numerous small abscesses and tubercles make their appearance after the separation of the crusts, forming an *Acne pustulosa*. They are seen chiefly on the nose and face, but differ in no respects from other pustular affections.

Pigment spots and cicatrices after Variola.—The deposition of pigment at those spots which were the seat of smallpox pustules is observed after every form of the disease, but especially after the *Variola vera* and the *V. modificata*. It occurs in the form of maculæ, which are of the size of lentils, and are either distinct or (more rarely) confluent at their borders. Their colour is more or less deep, and does not fade or disappear beneath the pressure of the finger. In some cases the centre of these spots displays a depression which is of a lighter tint, and which, even at this time, and still more plainly after the disappearance of the pigment, is seen to be a small cicatrix. These scars are observed particularly at those points which were occupied by the more deeply seated variolous pustules, and especially where these were confluent. But in no case do we find cicatrices left by every one of the pustules which were present. Even in the most severe forms of confluent *Variola vera* the disease leaves marks of its presence only at certain spots. Unfortunately, the face is most frequently the part at which these scars remain visible.

The cicatrices of smallpox differ in no respect from those which result from an *Acne pustulosa;* and we are, therefore, not warranted in speaking of them as characteristic of the former disease. It is only the uniform distribution of these scars and the fact that they are found principally on the face which can enable us to determine that the individual has previously been affected by variola.

I must not omit to mention that cicatrices may be and are formed in each of the varieties of smallpox, even in the mildest form of that disease. All that is necessary is that the pustules should penetrate into the substance of the corium. It is quite incorrect to suppose that these scars are produced by the patient's scratching himself while the eruption is out.

The development of the smallpox efflorescence on parts of the skin occupied by hairs, or beneath the nails, leads subsequently to a temporary or permanent loss of these structures. Thus, when smallpox pustules have been developed in large numbers on the scalp, so as to destroy a large number of the hair-sacs, the hairs will, of course, be ever afterwards deficient at these spots. But if, on the other hand, the eruption, though occupying the head, has been quite superficial, so as to leave behind it very slight cicatrices, or even none at all, then, although the hair may at first fall off, it will yet grow again after the termination of smallpox as after any other severe disease. This is true also of the nails, beneath which (that is, on their bed) smallpox pustules are frequently developed. When this occurs a spot of pigment afterwards makes its appearance on the surface of the nail, but is gradually thrown off by its subsequent growth, and is not followed by any further injury to this structure. But if the pustules are deeply seated, involving the *matrix unguis*, the disease then, of course, leads to a permanent loss of the nail.

When a person previously affected with any other acute or chronic skin-disease is attacked by smallpox, it generally happens that during the presence of the variola the pre-existing cutaneous complaint disappears. The exanthem is, in fact, developed with peculiar intensity on the parts already diseased, which become covered by the smallpox efflorescence to such a degree, that the previous eruption loses its original appearance. Thus, in patients suffering from eczema or psoriasis, or syphilitic eruptions, the parts so affected present a larger number of variolous pustules than other parts of the cutaneous surface. Other chronic skin affections make no advance so long as the smallpox is present. In patients affected with scabies, the acari themselves perish, and their eggs alone survive. But when the smallpox has run through its course, the other disease, whatever it may be, returns; the psoriasis or the eczema reappears; the prurigo sets in afresh with renewed itching, which had been absent during the presence of the smallpox. My own observations lead me to believe that pre-existing chronic skin affections are very rarely permanently cured by an attack of this disease. Most frequently all that it (like many other severe maladies) effects is to check for a time the progress of the chronic cutaneous complaint, which, however, breaks out with renewed violence after the termination of the exanthem.

As is well known, suppuration occurring in the skin always leads to swelling of the adjacent lymphatic glands. There is, therefore, nothing extraordinary in the fact that, in smallpox, the glands which receive the cutaneous absorbents should become more or less generally enlarged. When the disease takes its normal course, however, the swelling of these structures subsides as the variola itself declines. But in some cases they still remain enlarged, and this condition may persist for a long time, or even throughout the whole life of the individual. In other instances, again, pus forms within them, and they then go through the ordinary course of suppurating glands.

Moreover, the glands which are situated in the interior of the body become affected in the same way as the superficial glands and the salivary organs, the symptoms thus produced being those which generally result from morbid conditions of these structures.

Unlike morbilli, variola is rarely followed by *tuberculosis*. However, in patients who presented well-marked signs of tuberculous disease before the outbreak of the smallpox, the tuberculous affection is aggravated by this exanthem.

Among the most unfavorable symptoms which follow smallpox, are those due to the formation of metastatic deposits in different parts of the body. The most frequent seat of such deposits, in variola, is the subcutaneous tissue, which generally becomes affected at various points, particularly on the extremities. Abscesses form, and, after the discharge of the pus which they contained, large cavities are left, showing that there has been an extensive loss of substance. In persons healthy in other respects, and of sound constitution, these cavities are for the most part quickly filled up, and lead to no further ill effects, except the cicatrices by which they are followed. But, in cachectic individuals, and particularly during certain epidemics, the granulations form very slowly; and in some cases these abscesses begin to spread, burrowing extensively among the adjacent structures, penetrating down to the bones, attacking the periosteum, and even causing necrosis.

These metastatic affections of the subcutaneous tissue and the skin may also give rise to gangrene, occurring (as has already been mentioned under the head of the Complications of Smallpox,) in either the moist or the dry form. The losses of substance thus produced are sometimes very extensive, and usually put an end to the patient's existence so rapidly that they lead to no further sequelæ.

Diagnosis of Smallpox.

The symptoms of smallpox are so characteristic, that it requires no very practised eye to recognise the ordinary form of this malady.

Cases of severe variola, when the eruption is at its height, are particularly easy of diagnosis. But it is otherwise when it is first breaking out, and in the milder forms of the disease, in which the efflorescence is present only in small quantity.

The following are the cutaneous affections with which is it possible to confound variola:

1. *Morbilli* in that variety which is attended with the development not of maculæ, but of papules. This mistake is frequently made, and is very excusable, since in each case the cutaneous eruption has much the same appearance, and is first seen on the fourth day of the disease. About this period, in fact, there are observed papular elevations of a reddish colour scattered over the whole, or, at any rate, over a large part of the cutaneous surface. It may, indeed, be said that the rash of measles has a much darker colour, and that the papules in that complaint are bigger, being at least as large as lentils, while those of smallpox are of a smaller size, and of a paler hue. Moreover, in variola the eruption successively affects different parts of the skin in their anatomical order, and, therefore, the largest papules are situated on the face and trunk, while those which occupy the limbs are of more recent formation: whereas, in morbilli, the papules on all parts of the body present nearly the same degree of development. But, in reality, these characters are not sufficient to enable the nature of the disease to be determined in this stage, and nothing but the further observation of the case can effectually save us from the chance of giving an erroneous diagnosis. For, after twenty-four hours have passed, the difficulty will have disappeared. If the disease be smallpox, the eruption will have undergone further development; if morbilli, it will have subsided into a macular form. Another distinction, which it is necessary to notice, is that the affection of the mucous membranes is more intense in measles than in smallpox. Its presence is not, however, so exclusively confined to the former of these complaints that we can infer, with certainty, from the prominence of catarrhal symptoms, that the case is one of morbilli.

2. There is a still closer resemblance between certain syphilitic pustular eruptions and the milder varieties of smallpox (varioloid and varicella), at the time when the pustules are fully developed, or in other words, during the stage of suppuration.

So far as their external form is concerned, indeed, it is quite impossible to distinguish these affections. The similarity l these diseases was insisted on both by Alibert and by Cazenave. The former gave to such syphilitic affections the name of '*Syphilis pustulans varioloïdes*,' on account of their being so like the varioloid; and the latter termed them the '*Syphilide en forme de varicelle*,' in consequence of their resemblance to varicella. In fact, as I have already mentioned, when giving an historical account of variola, it was this which gave rise to the names smallpox, *petite vérole*, in contradistinction to the great pox or *grande vérole*. It must not be supposed that the presence of fever in variola, and its absence in the syphilides, is sufficient to distinguish these affections from one another. There are cases enough of varicella which go through their whole course without any acceleration of the pulse, or increased heat of skin; and, on the other hand, the pustular syphilides are frequently attended with febrile symptoms, or complicated with some febrile disease. The only certain indication of the presence of smallpox in these cases is the fact that the efflorescence, when carefully examined, is found to present almost the same degree of development over the whole surface of the body; whereas the pustules of syphilis never all exhibit the same form. These last, in fact, make their appearance not simultaneously, but in an uninterrupted succession, and, therefore, they may be seen at the same moment in every stage of development and involution.

It is true that, in applying this distinction, we meet with a difficulty in the fact that varicella is often developed by successive eruptions, at intervals, generally speaking, of some days. When this occurs, the efflorescence certainly presents at the same time various stages of development and of retrogression. In such cases, the only way to arrive at a correct conclusion is to examine carefully the whole surface, not only of the skin but also of the mucous membranes, so far as they can be seen, taking into consideration, likewise, the condition of the other organs; unless, indeed, one has the opportunity of forming a right diagnosis by watching the further course of the affection. If we can do this, there is, of course, no further difficulty. For, smallpox being an acute disease, the variolous eruption will, within a few days, have undergone decided changes, either in the direction of further development, or in that of involution; whereas, in syphilitic complaints, such alterations in the appearance of the skin affection will present themselves only after the lapse of several days or even weeks. Thus, one may very well be in doubt for a few days, but this uncertainty can never be of long duration, because variola always runs an acute course, while the syphilides are invariably chronic.

3. Another cutaneous disease, which bears a certain distant resemblance to smallpox, is the *acne pustulosa.* This affection, however, is generally seated only on the face, chest, and back, and leaves the limbs untouched; moreover, it is not *homogeneous,* but consists at the same time of papules of various sizes, and of pustules; lastly, every one of these presents in its centre a comedo. These differential characters surely make it appear impossible that this disease should be confounded with variola after the skin has been carefully examined.

4. After the termination of the variola, there remain, as is well known, spots of pigment on the surface of the skin, which, in some cases, bear a distant resemblance to the copper-coloured maculæ of syphilis. But here any mistake will be at once cleared up by the total absence of infiltration of the skin, or desquamation of the cuticle, at the points which are the seat of pigment-deposit.

5. Glanders is another disease which gives rise to the formation of subepidermic abscesses, which sometimes look like variolous pustules, becoming confluent. In this complaint, however, there are always, in addition, deep-seated abscesses, with infiltration of the areolar tissue, hæmorrhagic infiltration of the muscles, or gangrene of some part of the body. Hence glanders can hardly be mistaken for smallpox unless one pays attention to the pustules alone, omitting to take into account the other symptoms. But further observation will, even then, remove any doubt that may exist; for in this disease the eruption does not pass through its stages so rapidly as in variola.

Prognosis of Smallpox.

In giving a prognosis in a case of variola, it is necessary to consider which form of the disease is present, what are the individual peculiarities of the patient, whether or no he has been vaccinated, and lastly, what is the character of the prevailing epidemic.

In general, it may be said that the more numerous the pustules the more dangerous is smallpox, and that its course is favorable in proportion as their number is small. Thus varicella always terminates in recovery; and it is only in cases of varioloid and variola vera that a fatal issue can be feared. But even in these forms of the complaint the prognosis is, at the present day, far more hopeful than formerly. For, in this country at least, most people have been vaccinated; and statistical inquiries have shown, that while among those who are unvaccinated the mortality amounts to 30·1 per cent., it is not more than 5·2 per cent. in persons protected by vaccination.[1] Moreover, this very circumstance gives to all the epidemics of smallpox a much milder character than they at one time displayed. Indeed, if no complications arise, even severe cases of this disease do not often terminate unfavorably.

If, soon after the formation of the pustules, their contents are stained with blood, or if their base is the seat of hæmorrhagic infiltration, an unfavorable prognosis must be given, at any rate when such appearances are presented by a large part of the efflorescence; and the existence of numerous ecchymoses, besides the ordinary smallpox eruption, justifies a similar opinion as to the probable issue of the case. On the other hand, the presence of well-developed, fully-distended, regular pustules, should lead to an opposite conclusion.

The individual peculiarities (Individualität) of the patient, again, are very important in relation to prognosis. The younger he is, the more dangerous is variola; nor has any circumstance more influence on the result of this disease, than the age of the subject whom it attacks.

Children at the breast even now for the most part die, when affected with smallpox. This arises chiefly from the fact, that the numerous pustules developed on the mucous membrane of the mouth and throat prevent the infant's obtaining nourishment by sucking, so that it commonly perishes from inanition. However, even unvaccinated children, if healthy in other respects, generally pass favorably through the milder forms of the complaint.

Among adults, a fatal termination of variola is observed far more often in women than in men; those who are pregnant, or who have been recently confined, being especially imperilled by this disease.

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[1] The numbers given in the original are 33 per cent., 12 per cent. respectively. I have, however, the authority of Prof. Hebra for saying that this is a misprint. There is a reference in the text to the "Papers relating to the history and practice of Vaccination," in which are contained reports from Prof. Hebra, and also from the 'k. k. Gesellschaft der Aerzte zu Wien.' The numbers given in the text are based upon the records of 6213 cases of smallpox. Of these 5217 occurred in persons who had been vaccinated, of whom 271 died; 996 occurred in individuals who had not been vaccinated, of whom 300 died. These data give the numbers stated in the text.—[Ed.]

In the early months of pregnancy, it generally causes abortion, and at a later period, premature labour; but, when this occurs, the fœtus does not invariably display any marks of smallpox. When this complaint attacks lying-in women, it constitutes a new source of danger, superadded to a condition which, in itself, is apt to take an unfavorable course.

Among men (who are more apt than women to drink to excess), smallpox is particularly to be dreaded in persons who imbibe large quantities of spirituous liquors, for the *delirium potatorum* often developes itself in these patients, forming a dangerous complication.

Individuals previously rachitic, anæmic, or the subjects of tubercle, are more severely attacked by variola than persons who enjoy good health, and present none of these morbid conditions.

According to my experience, lastly, the fact of having previously passed through the disease is to be enumerated among the most unfavorable circumstances, in reference to the prognosis of smallpox. I have repeatedly had occasion to observe, that persons who had before been attacked by variola, and who presented the most marked cicatrices, have died of this complaint when seized with it for the second time in a severe form.

Among the complications of smallpox, those which are to be looked on as most dangerous are the metastatic affections, in the form of abscesses or gangrene.

Treatment of Smallpox.

Under this head, we have to consider separately the management of the disease itself, and that of its complications and sequelæ.

Uncomplicated variola passes regularly through its various stages, and in the majority of cases terminates favorably, *without any treatment whatever*. Its course is not in any way altered by the less severe external influences, nor even by the simultaneous presence of internal diseases, unless of some intensity. Hence, there can be no question as to the employment of any remedies, except such as are adapted rather to soothe the patient than to put a stop to the morbid process; and we must either give no medicine at all, should such a course be compatible with the circumstances of the case, or order simply some of the *Emollientia*, *Mucilaginosa*, or *Oleosa*, which, in mouth, serve to keep the mucous membranes in a moist condition. Our duty is not so much to give our patients any positive prescriptions, as to warn him vehemently against the employment of any of the more energetic plans of treatment. Thus, the practice, once customary, of bleeding during the *stadium prodromorum*, with the supposed object of favouring the development of the eruption; the administration of emetics and purgatives, to keep the *primæ viæ* free from all "sordes;" and the application to the skin of irritants, such as sinapisms or vesicants, are alike unadvisable. These last, indeed, are especially to be avoided, because, as I have already shown, variolous pustules are developed in much greater numbers on those spots which had before been (intentionally or accidentally) exposed to irritation, than on parts which have not previously been rendered in any way hyperæmic.

On the other hand, no objection can be made, upon either theoretical or practical grounds, to the employment of tepid baths, or the cold douche itself, even in the *stadium floritionis* of smallpox. For experience has sufficiently proved that no ill effects whatever are produced even by their repeated use.

We may, however, deviate from this expectant method of treatment in certain cases of variola vera, in which the disease runs a very protracted course, and in which quinine, the mineral acids, or the bitters are indicated by the occurrence of rigors or by the persistence of the secondary fever. The specifics once vaunted—among which camphor, especially, played a prominent part—have not, according to my experience, the value which has been ascribed to them.

Powerless as our medicines prove to be in controlling the variolous process, they are no less ineffectual to relieve those disagreeable symptoms—such as salivation, or angina—which sometimes accompany the disease. Thus, we have no remedy which can either prevent the occurrence of salivation, or check it when present. It may, indeed, be thought that this is to be effected, after continuing their use for about a week, by gargles which either consist simply of mucilaginous or astringent decoctions, or contain chlorate of potash, alum, or tannin. But to those who are of this opinion, I may with truth reply that, in cases of variola, I have invariably found these affections to subside within the same space of time, or more quickly still, when the mouth of the patient was simply rinsed out at intervals during the day, or even without any treatment whatever.

But while I admit that no treatment is required by cases of smallpox which run the regular course of the disease, I am yet far from being satisfied with a mere expectant method in the protracted and severe forms of *variola vera*. On the contrary, as I shall immediately explain, I see fully what should be the aim of a rational treatment of variola, although my attempts to attain this object have hitherto been unsuccessful. As I have already stated, the course of smallpox may always be divided into two distinct periods. In the first of these, we have to deal only with symptoms which are called into existence directly by the variolous process, or (if we choose to call it so) by the variolous dyscrasia. Among these symptoms are the special forms of efflorescence, which appear on the skin and on the mucous membranes. But, after about the tenth day, when the disease has reached its height, it varies in its course in different instances, and may take either of two directions. In one case, its course is favorable; the contents of the pustules dry up, and we are warranted in anticipating the recovery of the patient. In another case, the purulent matter remains for some time fluid; and under these circumstances a fatal termination frequently takes place, from the formation of metastatic deposits. Now, the only way of explaining this occurrence is to suppose that the pus, when its desiccation is impeded, undergoes a putrefactive fermentation; that this decomposing organic fluid, being in contact with the vessels of the cutis, is absorbed by them, and enters the circulation; and that thus is produced the affection known at the present day by the name of pyæmia. It may fairly, then, be the aim of the medical art so to bring variola to a termination, that the process of decomposition of which I have spoken may be rendered innocuous. Now, there are two ways in which this might conceivably be effected; on the one hand, by inducing the quickest possible desiccation of the pustules; on the other hand, by removing their contents with as little injury to the epidermis as may be, and so as not to expose the cutis or permit the access of air.

It was formerly the practice, in cases of smallpox, to employ caustics (das Ectrotisiren) with the hope of favouring the desiccation of the eruption, which I have stated to be one of the objects of a rational treatment of the disease. For this purpose, a stick of nitrate of silver was introduced into every individual pustule, and rubbed forcibly over its base, so as to coagulate the albuminous contents. But, although this can be done in cases of varicella or varioloid, it is quite impossible to carry out such a practice in the variola vera, when the efflorescence is present in large quantity, and especially in the confluent form of the disease, in which the whole surface of the skin is covered uninterruptedly with the pustules. This treatment would, under such circumstances, give the patient so much pain, that we should have to fear the most injurious effects on the nervous system. The application of nitrate of silver is, in fact, impracticable in those very cases which are the most dangerous. Moreover, experience has shown that it fails in attaining the object aimed at, for a fresh exudation, which itself becomes purulent, is found to accumulate beneath the eschar produced by the caustic. This procedure, therefore, is no longer adopted.

Other methods, besides this, have been tried, with the object of causing coagulation of the contents of the pustules. Thus corrosive sublimate, alcohol, and tincture of iodine, have been applied locally, and electricity also has been employed. No success, however, has followed these modes of treatment.

Now, we find from experience, that, on the mucous membranes, the efflorescence never becomes so fully developed as on the surface of the skin. In the former situation, the contained fluid does not become purulent, and crusts are never formed. This peculiarity can be attributed only to the circumstance that the mucous surfaces are perpetually kept moist (macerirt) by their secretion. Hence it is natural to suppose, that if the roofs of the smallpox pustules on the cutaneous surface can be kept constantly soaked by fluid in a similar way, the same result will be attained; that is, the fluid contents of the eruption will be allowed to escape earlier than would otherwise be the case.

With the object of effecting this result, I have made certain experiments upon individuals affected with smallpox, covering one of their extremities with wet cloths, while, for the sake of comparison, the corresponding parts of the opposite limb were left dry. These observations proved that this procedure is, at any rate, comfortable to the patient, although it did not do all that I desired. I have found it particularly useful to apply this treatment to the soles of the feet. As I have already stated, when these parts are kept dry, the formation of numerous smallpox pustules upon them produces great pain, in consequence of the thickness of the epidermis, which is with difficulty raised by the exudation, and thus causes a counter-pressure on the cutis. But when the feet are wrapped in wet cloths, covered with oil-skin or thin gutta percha, no disagreeable sensations are complained of.

These experiments matured in my mind the project of devising an apparatus by means of which the patient could be kept in water of the temperature of his body, continuously, day and night, throughout the whole course of the disease. My object was, by thoroughly soaking the pustules, to favour the escape of their contents, and, at the same time, to prevent the access of air, so as to render it impossible that any decomposition of the pus should take place. I shall refer more fully to this apparatus when speaking of the treatment of burns.

The applications formerly recommended for the purpose of preventing the formation of cicatrices after smallpox, seem to have been directed to the same end, that of softening the roofs of the pustules. Among the remedies employed with this object, were the following: the simple mercurial plaster, the Empl. mercuriale de Vigo,[1] the rind of bacon tied over the face, the simple Cerat. Cetacei, the Ung. Plumb. Acetat., and cold cream (*crême céleste*). But neither these applications, nor even corrosive sublimate, the tincture of iodine, or the spirit of camphor, succeeded in every case in preventing the occurrence of "pitting." Indeed, it is obvious, from what has been stated above, that it could not be otherwise. For when the pustules are deeply seated, and imbedded in the cutis itself, the loss of substance caused by the variolous process cannot be obviated by any method of treatment. The apparent efficacy of these vaunted remedies may be easily understood, when we reflect that under no circumstances is every smallpox pustule followed by pitting. Indeed, of one hundred patients affected with the *variola vera,* hardly fifty will afterwards present cicatrices; and in varicella and the varioloid, either none at all are formed, or a few only are left as proofs that the individual has passed through the disease.

Thus, then, whatever remedy is made use of with the object of preventing the pitting, it will be found, if the same treatment is carried out in all cases without exception, that many of the patients after recovery present no cicatrices. That this is the case is, indeed, proved by the fact that in the last century, before vaccination was practised, and when most people, as is well known, were attacked by smallpox, every one was not pitted, but only those in whom the disease affected the deeper strata of the skin. It certainly does, however, give the patient great relief, to keep the skin of the face covered with some emollient substance from the *stadium eruptionis* till the crusts are formed. But for this purpose the application of bacon or some simple ointment does just as well as any of the compound ointments, tinctures, or lotions.

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[1] The Empl. de Vigo was a farrago, containing a large number of substances. Twenty parts of this plaster, with three parts of mercury, previously extinguished by trituration with one part of oil of turpentine, constituted the Empl. mercuriale de Vigo. (V. Jourdan, op. cit., ii, p. 41.)—[ED.]

It was for a long time firmly believed, that the development of variolous pustules on the conjunctiva could be prevented by using collyria from the very commencement of the disease; these collyria being either applied externally to the eyelids by means of compresses, or dropped into the eye. This notion, however, turns out to be unfounded. For, in no one of the cases of smallpox (far exceeding 5000 in number) which have come under my care, have I observed any pustules on the surface of the eye, although I have had recourse to no prophylactic treatment whatever. The conjunctival fluid seems to act here in the same way as the secretion of the mucous membranes, and, by keeping the surface moist, to prevent altogether the formation of pustules, or, at any rate, to make them at once abort, and die away.

The treatment of the complications of smallpox is that of the internal or external disease, which is present in the particular case. These affections require the adoption of the same remedial measures, as if they were independent of the variolous process. Thus, any abscesses or furuncles which may appear should be opened as early as possible, and the contents having been discharged, the closure of the cavity of such abscesses should be favoured by the application of pressure. Inflammatory affections of the skin—erysipelas and pseudo-erysipelas demand an antiphlogistic treatment; but leeches should not be used, nor scarifications; the application of bags of ice, or of ice-cold wet rags (Eisumschläge) being all that is necessary. Lastly, gangrene or diphtheritis must be treated on the ordinary principles of surgery.

It remains for me to discuss in detail the hygienic management of smallpox. In this, and indeed in every complaint, fresh air and a moderate temperature are above all things beneficial. The fear lest persons affected with variola should "catch cold" led our forefathers to place them in rooms which were kept at a high temperature, and in which no ventilation whatever was allowed. Indeed, they even forbade changing the patient's linen. But I have satisfied myself, on the contrary, that the more severe the disease the greater the need of fresh and even cool air, of frequently changing the patient's bed- and body-linen, and of carefully cleaning the surface of his body. In this way his sufferings may, in fact, be considerably lessened.

The supposed *retrocession* of smallpox has never occurred within my experience, even when the patient has been exposed to the most severe weather throughout the whole course of the disease. In fact, I have seen several instances in which persons have remained in the open air through every stage of the exanthem, and have sought admission into the hospital only during the *stadium decrustationis;* and I have had to treat one patient who had been compelled, while suffering from a severe attack of variola vera, to make a twelve days' journey on foot. This occurred, moreover, during winter, when the temperature was as low as 10° Fahr. (– 10° R.). Notwithstanding his lamentable condition this poor man found relief nowhere, till at last the hospitable portals of the General Hospital of Vienna offered him a place of refuge. When this patient was admitted his body was found covered with crusts formed from variolous pustules.

The hydropaths (Naturhydropathen) have submitted cases of smallpox to a treatment which would never have entered the head of a regular physician. These practitioners have placed patients suffering from the disease in unwarmed rooms, in houses built merely of planks, have "packed" them repeatedly in wet cloths, and have allowed them to bathe several times a day in water of a temperature of 36°—41° Fahr. (2°—4° R.). Yet even these proceedings have not caused a metastasis of the contents of the smallpox pustules to more important organs. In spite of the treatment the patients have recovered.

Acting upon a knowledge of this fact, I have prescribed cold douche baths to several patients affected with smallpox, and have kept them out of bed from the commencement of the disease until the formation of crusts was completed; nor have I ever seen any ill effects produced by these measures.

Now I do not consider this practice to be either humane or appropriate in cases of smallpox; on the contrary, it is in the highest degree unpleasant to persons suffering from a severe illness; and, therefore, I do not recommend its adoption by others. But I think that I have proved positively that it is not possible to cause the retrocession of variola, or to do the patient harm, by exposing him to the influence of either cold air, or cold water, or, in other words, to the danger of "catching cold."

A person affected with smallpox, then, should be kept in his usual bed, in a well-ventilated room, and at a moderate temperature (61°—64° Fahr.). The bed- and body-linen should be frequently changed; and he may be allowed as much cold, cool, or lukewarm fluid as he may be inclined to drink.

The nature of his diet must depend chiefly on the presence or absence of fever. An individual suffering from *variola vera* will, for the most part, feel no desire to take food before the tenth day of the disease. But, in varicella, there is generally a good appetite after the fourth day, that is, at the end of the *stadium prodromorum*. In this matter the inclinations of the patient may be considered; if he is free from fever, we may give him light meat-broth as soon as he can take it, afterwards allowing other well-cooked, nutritious kinds of food, according to the state of his appetite. In reference to prognosis, the fact that food is taken from the first, is to be regarded as a favorable sign. Indeed, when one considers how great is the waste of the vital fluids caused by the variolous process, it is easy to see that their replacement by the ingestion of nourishment, must contribute very greatly to the restoration of health.

When the disease runs its ordinary course, there is no necessity for the patient to take baths or to be washed. But, during the *stadium decrustationis*, a bath always gives him great comfort.

It is clear, lastly, from what has been said, that it is quite unnecessary to subject patients convalescent from variola to a further quarantine of a month or six weeks. As soon as the crusts are all detached, and the patient has been washed or has taken a bath, he may with safety be dismissed from treatment; to him, at any rate, no ill consequences will ensue. But as we do not precisely know the limits, as to time, of the contagiousness of smallpox, nor how soon the patient ceases to be a source of danger to those with whom he comes in contact, it will be more judicious, so far as others are concerned, to keep him isolated a little longer, perhaps for a fortnight after the termination of the disease.

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CHAPTER XI.

VACCINIA, OR COW-POX.

(CLASS IV.—ACUTE, CONTAGIOUS, EXUDATIVE DERMATOSES.)

More than a century since, it first came under the observation of physicians, and of philosophers (Naturforscher) also, that when the smallpox prevailed in human beings similar eruptions appeared on the udders of cows. Thus, as far back as the year 1713, we find a treatise 'De lue Vaccarum,' written by Salger; and in 1765 Sutton and Fewster gave a description of the cow-pox, and drew attention to its protective power against smallpox. In the years 1769 and 1781 we find further mention, at Göttingen and at Montpellier, of the properties of the virus of cow-pox; and, in 1791, a man named Plett, a schoolmaster in Holstein, is said to have inoculated two children with this virus, and to have thereby protected them from smallpox. But it was Dr. Jenner who, in 1796, after long-continued preliminary investigations, made the first decisive experiment, by inoculating the arm of James Phipps, a boy eight years old, from the hand of a milkmaid, named Sarah Nelmes. Dr. Jenner published his results in the year 1798. Vaccination soon met with general acceptance, the practice being diffused chiefly by De Carro, Osiander, Sacco, Woodville, Gassner, Neumann, Thiele, Ceely, and others. These writers have also demonstrated the identity of vaccinia and variola, by observations on man and on the lower animals, and by the performance of *retrovaccinations.*

Even within the first few years after the introduction of vaccination some of those persons, on whom the operation had been performed, were attacked by variola; so that it at once became evident that the protective power of vaccination is not absolute, as had been hoped by its discoverers and by those who first wrote upon it. But even then it was obvious that the occurrence of smallpox in vaccinated individuals is quite exceptional; that the course taken by the disease is, in such persons, much less severe, and that the pustules are much less numerous; and, lastly, that a fatal termination is very rarely observed. Hence, in order to maintain in its integrity the doctrine of the protective action of vaccinia, physicians came to explain these cases by referring them to a disease which they termed varioloid, and which was supposed to be essentially distinct from, although similar to, variola.

During the time which has since passed, however, the question of the protective power of the cow-pox has been so fully tested, that we are now able, independently of any preformed opinion, to draw conclusions based directly upon numerous observations and upon statistical data. These conclusions are altogether favorable to vaccination. A few sceptics have, indeed, arisen here and there who have tried, by their suspicions and cavillings, to bring into discredit this blessing to humanity. But the sound sense of mankind in general has expressed itself so decidedly in favour of vaccination, that there is no ground for fear that due advantage will not be taken of this beneficent discovery.

It has long been a moot point, whether vaccinia is identical with variola, or merely allied to that disease; and I think that I can best answer the question by drawing attention to the following facts. Numerous and repeated experiments have shown that the smallpox virus, when taken from man, and transferred to one of the lower animals (that is, either to a cow, or to a horse, ass, goat, pig, dog, or ape), gives rise to an affection resembling the eruption of variola in its form, and also in the changes which it undergoes. Moreover, *retro-inoculations* (from one of the lower animals to man) have given rise, in the human subject, to a distinct smallpox efflorescence, although it is true that the entire disease has never been reproduced in this way. The virus, therefore, is essentially the same, being merely rendered milder by passing through the animal organism.

Again, if we compare the course of the vaccine eruption in the cow and in the human subject, with the smallpox efflorescence, we find so close a resemblance between the two affections, so perfect a uniformity, both in the structure of the vesicles or pustules, and in their periods of development and involution, that their identity is perfectly obvious.

For, if the contagious fluid derived from the vaccine vesicle of the cow be brought, either by accident or intention, in contact with the human skin by any one of the methods hereafter to be described, the following result is observed. In the first place, there is an interval of three days between the time of inoculation and the appearance of the first symptoms of reaction, during which period no sign of any change in the skin is to be detected. But on the fourth day the epidermis becomes raised, so as to form a small papule; in the course of the fifth and sixth days, the quantity of fluid in its interior increasing, the papule passes into a vesicle; and this, during the next two days, enlarges, attaining its full development on the eighth day from that on which the inoculation was performed.

The red areola, which, as early as the seventh day, appears at the circumference of the vesicle, is an indication that the fluid in the interior of the vesicle is beginning to contain a greater number of pus-cells; and from the ninth day up to the twelfth its distinct yellow colour shows that the contents have become completely converted into pus. From this time it begins to undergo desiccation, drying up gradually from the centre to the periphery, and thus forming a crust which remains adherent till the twenty-first day.

Now, if we compare this description with that of a moderately severe case of smallpox, we find that the pustules, in each of these affections, pass, in equal periods of time, through changes which are in every respect the same. Indeed, we even observe, in each instance, similar modifications of the ordinary course of the eruption; this being sometimes of shorter duration, and sometimes more protracted. Again, an examination into the anatomical structure of the smallpox pustules, as compared with that of the pustules of vaccinia, shows that they are identical. In regard to this point, I have only to refer to the description which I gave when speaking of variola, and which is perfectly applicable to the efflorescence of cow-pox also.

These facts, which prove the identity of smallpox and vaccinia, also enable us to understand how it is that vaccination possesses a power of protecting against smallpox, and yet that this power is (relativ) not *absolute*. For, just as we find by experience that the fact of having once passed through an attack of variola is itself but a partial (relativ) security against a second infection, so must it necessarily be with the cow-pox also; if, indeed, *its* protective power be not still less complete, in consequence of the fact that vaccinia is a milder disease than smallpox. It is, however, this very circumstance which renders the cow-pox suitable for inoculation, making it possible for us to perform *vaccination* without exposing the patient to the dangers of ordinary variola in the same way as when the virus of that complaint is transferred directly from one human being to another. Guided by these views, then, we shall not expect vaccinia, the milder variety of the disease, to afford a protection against smallpox more absolute than we are in the habit of looking for from severe variola itself.

When this method of preventing smallpox was first proposed, at the end of the last century, the lymph employed was derived either from vesicles existing on the udders of cows, or from those which are found in horses affected with the "grease;" the fluid obtained from the latter source being itself sometimes first transferred to the udder of a cow, instead of being used directly for inoculation in the human subject. Vaccine vesicles having, in one or other of these ways, been obtained in man, their contents were removed eight days later, and the lymph thus procured was transferred to other persons who required to be vaccinated, after which they, again, afforded a fresh supply, and so on. This practice led, at the time, to an observation, which has been confirmed by subsequent experience, namely, that when a human being is inoculated with lymph taken immediately from one of the lower animals the operation is less certain to succeed than when the lymph is merely transferred from one person to another. Moreover, in the former case the pustules which are produced are attended by far more severe symptoms of reaction than when the lymph has previously been *humanised* (humanisirt).

These observations suggested the further inquiry whether more perfect security from smallpox is offered by vaccinating with lymph taken directly from the cow, or by employing vaccine matter which has already been transmitted in succession through several human beings. We are enabled to answer this question with the utmost certainty by the results obtained at the principal vaccine institution of Vienna. Some of the lymph used in this establishment has been carried down without interruption from the first vaccinations practised by De Carro at the beginning of the present century; and now, at the end of sixty years, this matter still "takes" just as well as before, and its protective action against variola is as complete as that of lymph which has, in the mean time, been derived from fresh inoculations with matter taken from the udder of the cow. In this institution a most exemplary system prevails, for in each room the same lymph is always used, and, during more than ten years, Dr. Friedinger has employed, each vaccinating day, matter from only one original source. Hence the results arrived at are, in every respect, of a very conclusive kind.

It appears to me, therefore, that lymph which has already been humanised should, at the present day, be used for vaccination rather than that derived directly from the cow. For the former takes easily, is followed by a comparatively slight reaction, and is readily obtained; while the latter is uncertain in its effects, and gives rise to much more intense inflammatory action. The principal reason which has induced people to prefer original cow-pox lymph to that which has passed through the human system, has been the fear that other diseases besides vaccinia might possibly be transferred to the patient by vaccination. But experience has now shown that no other morbid conditions or dyscrasiæ can be thus introduced. Indeed, no one, when he has unintentionally become inoculated with the syphilitic poison, fancies that he may, at the same time, have acquired scrofula or gout; but it is just as probable that this should occur as that any other disease should be conveyed by vaccination besides the mild form of smallpox, which it is the object of the operation to transmit. This question has, in fact, been submitted to direct experiment, by using for inoculation a mixture of chancrous pus and vaccine virus; the result of employing this combination being that sometimes a chancre was produced, sometimes a vaccine vesicle, but never any modification of them or any third affection. For information upon this matter, and also for the elucidation of other points, of which I shall hereafter have to speak, I may refer the reader to the English blue-book,[1] of which the conclusions are based upon opinions and statistical data derived from all parts of Europe.

Another point, with reference to which the views of medical men are divided, is the question whether vaccination should, or should not, be performed while a child is very young. But, if we take into account the danger of smallpox in little children, and the diminished severity of the disease in those who are older, we cannot but advocate the practice of vaccinating during infancy. This conclusion is further strengthened by the fact that the operation is perfectly free from danger, even in children of the most tender age. In the principal vaccine institution of Vienna infants are often vaccinated when only ten days or a fortnight old, without any injurious effects being observed. In a child, healthy in other respects, and suckled by its mother or by a nurse, this operation gives rise to no unpleasant symptoms whatever, with the exception of slight febrile disturbance, which, however, subsides, at the latest, within from six to twelve days after inoculation.

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[1] 'Papers relating to the History and Practice of Vaccination,' by John Simon, London, 1857.

I am, then, a decided advocate for early vaccination, and advise that it should, in general, be performed when the child is a fortnight old.

Again, it is shown by the experience of our vaccine institution that the *season of the year* does not affect, to any great extent, the results of vaccination. In fact, both successful and unsuccessful cases are observed at all seasons; nor can we in any way attribute the result to the time of year at which the operation is practised. The same thing, however, occurs with vaccinia as with many epidemic diseases. There are periods when the contagion of variola is very active, and others during which it is much less so; and, in the same way, vaccination sometimes succeeds in every case, while, at other times, frequent failures are met with; but neither the time of the year nor the weather has anything to do with these differences. We may, then, perform vaccination at any season.

The *parts of the body* usually chosen for this operation are, of course, such that the cicatrices which follow may be covered by the clothes, so as not to be visible under ordinary circumstances; but it does not matter in any other respect what spot is selected. Vaccination is, as is well known, most commonly performed on the upper third of the arm. When, however, the child is affected with a nævus, this may be chosen as the seat of the operation. In this case numerous punctures must be made side by side, and sufficiently close to one another that the subsequent cicatrices may coalesce, and that, as a result of the formation of these cicatrices, the morbid structures may become atrophied.

Another matter of very little importance is the number of punctures which are made, the only reason for the ordinary practice of inoculating at several points being to ensure that at some of them the operation may succeed and produce a vaccine vesicle. I do not believe that it is necessary to obtain several of these vesicles in order to give an additional degree of security against smallpox.

As is well known, there have been from the first many different methods of vaccinating. Some operators have applied small blisters, and have afterwards put portions of the vaccine crusts on the surface thus deprived of its cuticle, or have rubbed into it the vaccine lymph. It is evident that this process must give rise to much more severe reaction, and must produce vesicles of far greater extent, than that which is usually adopted. Others, again, have made use of an instrument resembling a drawing pen, and consisting of two parallel limbs with cutting extremities, between which the lymph is taken up. In employing this instrument the vaccine matter is introduced beneath the cuticle by a horizontal or vertical incision. The wound which it causes is, however, larger than is necessary, and the object aimed at is not attained without causing considerable pain in the part which is the seat of the punctures.

The most satisfactory method of vaccinating hitherto proposed is that by means of a lancet made for this special purpose, and having one surface convex, the other slightly hollowed, and presenting a groove, to which a drop of the lymph adheres.

In employing this instrument it is necessary to introduce its point beneath the cuticle to the depth of at least a line, holding it horizontally with the convex surface downwards and the concave surface upwards. When the epidermis has been penetrated the lancet must be turned round, so that its convex surface shall look upwards and its concave surface downwards towards the cutis. The thumb of the left hand (supposing that the right is used to hold the instrument) must then be placed over the wound, and made to exert a gentle pressure upon it; and the lancet is then to be withdrawn, the lymph being thus, as it were, *wiped off* into the cutis. When vaccination is performed in this way it does not matter whether a drop of blood does, or does not, escape from the puncture; nor does it make any difference whether we allow the clothes to be at once put on, or leave the part exposed for some time.

There is also another method of vaccinating, which is, however, much less certain to succeed than that which I have been describing. Hence it is only when that method of performing the operation is inapplicable that this should be adopted. It consists in collecting the lymph upon "points" made of bone (Beinlanzetten) and allowing it to dry. These points are subsequently introduced into the punctures made by an ordinary lancet, and are left in them for some time.

In performing this operation it is always best to transfer the lymph directly from one patient to another, using for this purpose the fluid found in the vesicles on the eighth day after vaccination.

As, however, we cannot in all cases do this, we have to collect and endeavour to preserve the vaccine matter. For this purpose, as is well known, small glass tubes, provided with capillary necks, are employed. When one of these tubes is to be used, its stem is first warmed in the flame of a candle, so as to expand the air which it contains. The vaccine vesicle having been punctured, the open extremity of the tube is next introduced into it, and quickly becomes filled with the lymph. The capillary end is then rapidly sealed in the flame. Vaccine matter, thus collected, may be preserved in a cool place for a very long time without loss of its power of protecting against smallpox. When we want to use it we have only to break off the end of the tube with our fingers, or with a pair of scissors, and to hold the stem over the flame of a candle, so as to expel the lymph. This, however, must be done with some care, for the sudden or long-continued application of heat may make the vaccine matter quite inert. Indeed, exposure to a temperature of 140° Fahr. destroys the contagious principle.

Irregular forms of Vaccinia.

The local effects of vaccination do not, in all cases, develop themselves in the way which I have described as being most generally observed. On the contrary, vaccinia, like smallpox itself, presents numerous irregularities. Of these varieties some concern the cutaneous appearances alone, being, in fact, the *local modifications of vaccinia*; whereas others are to be regarded as *symptoms of a general reaction*, produced by an absorption of the contagious matter into the blood.

It is impossible not to recognise the similarity between the irregular forms of vaccinia and those of variola. For, in the latter disease also, we have to deal with local and with general modifications of the normal course; and in it, as in the case of vaccinia, the local appearances consist, sometimes in an anomalous development of the pustules, sometimes in the presence of some other affection, such as erysipelas or gangrene.

1. *Local Modifications of Vaccinia.*

(*a*) *Variola Vaccina atrophica.* The stunted or warty form of cow-pox. (Steinpocke.)

By this term is understood a condition in which the vaccine vesicle does not fully develop itself, but remains in the papular stage, or, if it passes into a small vesicle, never comes to contain any considerable quantity of fluid, as it does under normal conditions. In these cases, in fact, the affection quickly dries up and forms a little, brownish-yellow, wart-like scab, which, when it becomes detached, leaves behind a small cicatrix. This imperfect, stunted form of vesicle, nevertheless, sometimes contains an inoculable fluid, which, when transferred to a more vigorous organism, may *take*, and give rise to regular vaccine vesicles. Hence it is evident that this modification of the vesicle produced by vaccination depends on some peculiarity in the individual vaccinated, rather than on any defect in the lymph employed. In some instances, however, the contents of these aborted vesicles cannot be used for further inoculations.

(*b*) *Roseola Vaccina.*

This affection has been already[1] described among the hyperæmiæ of the skin; but it requires to be enumerated as one of the varieties of vaccinia, and, therefore, I again refer to it in this place.

As is well known, it forms a diffuse rash, affecting the arms of those who have been vaccinated. It makes its appearance from the third to the eighteenth day after the operation; and, after the contents of the pustules dry up, it subsides without leading to any further effects.

(*c*) *Variola Vaccina herpetica.* (Eczempocken oder Krätzpocken of German authors.)

On the third day after vaccination has been successfully performed there sometimes appear at the seat of the operation a number of vesicles, placed close to one another, and filled with a watery fluid. This affection is attended with severe itching. The contents of the vesicles soon escape, and afterwards there is a continual oozing from the surface. The itching, which makes the child perpetually try to scratch or rub the part, and the fact that the clothes are constantly sticking to the skin and being torn off from it, favour the development of an eczema, which presents a more or less infiltrated base, and is surrounded by an inflammatory areola of greater or less extent. This affection often gives rise also to a swelling of the neighbouring axillary glands.

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[1] *Vide* p. 58.

This form of vaccinia is observed chiefly in children who are weakly, rachitic, scrofulous, or anæmic. But it may present itself in any child if the vaccine vesicles are accidentally broken, so that the fluid escapes from their interior before being converted into pus. Experience does not confirm the supposition that this affection is especially attributable to the presence of other chronic cutaneous complaints, such as scabies or eczema.

(*d*) *Variola Vaccina bullosa, Pemphigoides.* (Blasenpocken.)

In this modification of vaccinia there is developed, instead of the usual papule or vesicle, a *bulla*, containing a transparent fluid, and having a reddened margin. This appearance may present itself either at all the spots which were the seat of vaccination or at some of them only. When the bulla breaks, its contents generally dry up into a thin crust, which, on falling off, leaves behind it no scar. In some cases, however, there arise beneath the crusts ulcers, which destroy the surrounding tissues, and, when they heal, give rise to very considerable cicatrices.

The fluid derived from these bullæ is not fit to be used for further inoculations.

The bullous variety of vaccinia is, for the most part, merely sporadic; but, during the year 1836, I had an opportunity of observing it in the Foundling Hospital of Vienna, in a *quasi* endemic form. This fact is also mentioned by Zöhrer,[1] in his work upon the subject of vaccination.

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[1] 'Der Vaccineprocess und seine Krisen,' Wien, 1846, p. 117.

(*e*) *Variola Vaccina furunculosa.* (Vaccinefurunkel.)

In this form of the affection red tubercles, as large as peas, appear at the spots which were the seat of vaccination. These tubercles afterwards suppurate. They correspond to ordinary follicular furunculi. The pus which they contain cannot be employed for the purpose of vaccination. It dries up into thin scabs, which, when they fall off, leave behind them no cicatrices.

This modification of the vaccine vesicle arises principally when the operation was badly performed, either with "points," or with the instrument above described (Impffeder), or by the method of longitudinal incisions; but it may present itself even after vaccination with the ordinary lancet, when this is allowed to penetrate too deeply into the corium.

(*f*) *Erysipelas Vaccinæ, Variola Vaccina erysipelatosa.* (Vaccine-Erysipel.)

This affection makes its appearance from the seventh to the tenth day after vaccination, at the time when the contents of the vesicles are first becoming opaque and purulent, and when each of them is surrounded by a more or less extensive areola, even in cases which take the normal course. It consists in the formation of a broad red ring, which rapidly increases in extent; it is attended with swelling, tension, and pain; and it presents the usual characters of an erysipelas. Afterwards it sometimes spreads downwards to the forearm, or even as far as the fingers, and in the opposite direction to the axilla and chest. It will be readily understood, from the nature of erysipelas, that concomitant and febrile symptoms will also be present, according to the extent and severity of the complaint.

This affection probably arises in very much the same way as that form of inflammation which is often set up in adjacent parts of the skin by the presence of pus or matters in a state of decomposition, when retained for some time beneath the integument, so as to be absorbed into the lymphatics or veins. The *erysipelas vaccinæ* is generally ascribed to the child's having caught cold, or having been fed with too rich and nourishing breast-milk. But I cannot admit that it owes its origin to these or to any similar conditions.

On the other hand, the following circumstances are to be regarded as being really among the predisposing causes of this disease:—The crowding together of a great many children into a confined space, as, for example, in foundling hospitals; neglect of cleanliness; and, lastly, a certain "constitutio epidemica," which is apt to prevail during the months of April, May, October, and November.

(*g*) *Variola Vaccina ulcerosa.* (Vaccinegeschwür.)

In cases in which the vaccine vesicles have developed themselves in the ordinary manner up to the eighth or tenth day, one sometimes finds that, instead of the contained fluid drying up and forming crusts, the pustules rupture and allow their contents to escape, and that *ulcers* then make their appearance. These ulcers spread both deeply and at their borders. They give rise to pain or itching, and are attended with febrile symptoms and with great restlessness, sleeplessness, and loss of appetite.

This variety is most frequently observed when the virus was derived immediately from the cow; but in some cases it appears even after vaccination with lymph which has already passed through several human beings. The fact that on the udders of cows similar vaccinal ulcers are sometimes met with is in favour of the supposition that this affection is due to the setting up of a very intense morbid process in the skin of the part, and not (as might be supposed) to any particular idiosyncrasy of the person vaccinated, or to any specific change in the blood.

(*h*) *Gangrene.* (Gangrän an den Impfstellen.)

Bednar[1] has given an instance of this, in the case of a weakly infant, thirty-three days old. In this child the crusts became converted, on the twenty-fifth day after vaccination, into a black, fœtid, gangrenous eschar. At the same time diarrhœa and bronchial catarrh set in, and sloughing bed-sores formed, and, in consequence, the child died on the fifth day from the commencement of the gangrene.

[1] 'Die Krankheiten der Neugebornen,' &c., Wien, 1853, s. 123.

2. *Modifications of Vaccinia affecting the System generally.*

(*a*) *Vacciniolæ.* (Nebenpocken.)

In addition to the cow-pox pustules which develop themselves in the ordinary way at the seat of vaccination, an eruption of a similar kind sometimes makes its appearance on other parts of the body. This affection resembles a varicella. The pustules are more or less numerous; they may arise either at the same time with, or subsequently to, those caused directly by the operation, and afterwards run their course simultaneously with them. It is said that even after the disappearance of the regular vaccine pustules a similar efflorescence may appear, constituting, as it were, a relapse of the complaint.

Medical men who practise vaccination (Impfärzte) advise that the contents of these pustules should not be used for further inoculations. For my part, I would venture to express the provisional opinion, founded on theoretical considerations (unmaassgebliche, subjective), that these cases ought, perhaps, to be regarded as instances of varicella occurring in persons who have been vaccinated.

(*b*) *Vaccinal Fever.* (Vaccinefieber.)

Between the seventh and ninth days after vaccination febrile disturbance of a more or less severe character sometimes sets in, manifesting itself by acceleration of the pulse, increased heat of skin, sleeplessness, loss of appetite, great thirst, &c. According to some observers, catarrhal symptoms (such as cough and hoarseness), and even repeated attacks of vomiting, have also been present in these cases. This affection varies greatly in severity; the symptoms may be so slight that they remain unnoticed; whereas, in other instances, they attain rather a high degree of intensity. When it runs its ordinary course, this febrile state is of very short duration, but in those cases in which it is associated with other anomalous conditions (such as erysipelas, furunculosis, or gangrene), it is more protracted, and of greater importance. It must, however, be borne in mind that all kinds of febrile complaints are just as likely to appear in persons who have, as in those who have not, been recently vaccinated), and consequently that attacks of fever occurring after vaccination has been performed are not necessarily to be set down as being effects of that operation.

Intestinal Disorder.

This complaint is commonly observed in infants at the breast, presenting itself when the vaccine vesicle has just attained its full development, or, more rarely, while the crusts are being formed. Its chief symptom is the frequency with which the bowels act, the evacuations being curd-like or of a yellowish-green colour, and generally fluid, though they may sometimes consist of ordinary fæcal matter.

At the same time, aphthæ often make their appearance on the mucous membrane of the mouth. These symptoms are unattended with danger to the child, and generally subside quickly under careful dietetic management.

δ. Diseases of the Glandular Organs.

Swelling of the parotid and submaxillary glands sometimes occurs after vaccination, and is attended with rather abundant salivation. Affections of the lymphatic glands of the neck and axilla are also met with under the same circumstances.

CHAPTER XII.

ON THE POLYMORPHOUS ERYTHEMATA.[1]

(CLASS IV.—ACUTE, NON-CONTAGIOUS, EXUDATIVE DERMATOSES.)

I. ERYTHEMA EXUDATIVUM.

A. *Erythema exudativum multiforme.*

WILLAN speaks of six varieties of erythema, which is one of the diseases of the skin included in his third *order*, the *exanthemata or rashes*. Of these varieties the first, which he terms the *E. fugax*, is described by me among the hyperæmiæ,[2] as belonging to that class of affections. The second, to which Willan gives the name of *E. læve*, is not, in my opinion, a peculiar cutaneous affection, but is merely a simple erythema (*E. fugax*), presenting itself on the skin of parts which are œdematous. Hence it only remains for me to speak, in this place, of the *E. marginatum*, *E. papulatum*, *E. tuberculatum*, and *E. nodosum*. Certain authors, however, have mentioned other forms besides these. Thus, Rayer describes an *E. Iris;* Biett, an *E. annulare*, seu *circinatum*, seu *centrifugum;* and Fuchs, an *E. gyratum*, an *E. urticans*, and an *E. diffusum*. But these various names by no means answer to as many distinct diseases; and therefore our first object must be to determine which of them apply merely to appearances developed in succession during the course of one and the same disease, and which of them are necessary to indicate cutaneous affections really different from one another.

Now, in reference to this point, experience has taught me that the *E. papulatum*, *E. tuberculatum*, *E. annulare*, *E. Iris*, *E. gyratum*, are merely forms of the same disease in different stages, the appearance varying according as the affection is undergoing development, or in a later period of its course, or subsiding. To this malady I shall apply the name of *Erythema multiforme.*

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[1] *Vide* p. 146.

[2] *Vide* p. 54.

The most striking character of this affection is its appearing on certain special parts of the body. Thus, in every instance, it is present on the dorsal surfaces of the hands or feet. In the more severe cases, but only in these, it may be observed on the forearms and legs, on the arms and thighs, and even on the trunk and face. It is, however, only in very exceptional instances that it affects the regions last mentioned; and when it is found on them it invariably exists also on the backs of the patient's hands, where, indeed, this cutaneous disease generally first appears.

The efflorescence which I am now describing consists of flattened papules or tubercles, of a dark blue or a brownish-red colour, and between lentils and beans in size. Their number varies in different cases. The skin immediately surrounding them is likewise reddened when they first make their appearance; but this is merely the effect of vascular injection, and lasts but a short time, subsiding, at the latest, within twenty-four hours. When it thus disappears this hyperæmic reddening leaves behind no pigment, and the dark red papules or tubercles then become still more plainly visible than they were before.

In the mildest cases the papules or tubercles which (corresponding to the *E. papulatum* and the *E. tuberculatum* respectively) constitute this affection persist only a few days. They are sometimes observed also on the fingers, where they closely resemble chilblains (Frostbeulen), and, when they disappear, are succeeded by a slight deposit of pigment.

When the disease is of longer duration, the tubercles become flattened; their red colour spreads to the adjacent parts of the skin, and fades from their centre. Hence, from each papule or tubercle is developed a red ring. This change constitutes the *Erythema annulare.*

Sometimes, however, the centre of such a circle is still indicated by a smaller papule; or, again, a second ring may develop itself round the first, and at a slight distance from it; so that we find either a small ring with a papule in its centre, or two concentric circles. These appearances characterise the *Erythema Iris.*

In some cases the affection comes to an end when it has undergone these changes. Its whole duration is then very brief; the red colour of the circles soon subsides, and only a slight pigment deposit is left when they have disappeared. In other cases, however, the rings formed from the tubercles in the way above described do not so rapidly fade and disappear, but first spread at their margins. Hence the different circles, originally distinct, approach one another, touch, and at last coalesce. In this way are produced serpentine lines, arising from the union of the segments of several circles; and it is this appearance which constitutes the *Erythema gyratum seu marginatum*. After a shorter or longer interval these rings at length cease to spread; their red colour fades, and the affection terminates without giving rise to any further morbid changes, and is followed by slight desquamation and a scanty deposit of pigment.

It appears, then, from the description which I have given, that the *Erythema papulatum* represents the lowest, and the *Erythema gyratum* the highest grade, in the development of this eruption. Hence, it will depend on the period at which the patient comes under medical observation, whether the case shall be diagnosed as an *Erythema papulatum*, or as an *E. annulare*, or even as an *E. gyratum*. It is easy to understand how dermatologists, who have seen such cases only at intervals (bei einer bloss ambulatorischen Betrachtung), have supposed that they belong to different species, whereas, when these affections are made the subject of clinical observation, the view which I have taken cannot but be adopted, namely, that they are all identical.

The *Erythema exudativum multiforme* gives rise to very trifling *subjective* symptoms. Some patients complain of a slight burning sensation, others of a slight itching. It is only when the papules on the backs of the hands are numerous and closely approximated, that the skin feels tense (Spannung), or thick and as if covered with a glove (Pelzigsein). The temperature of the surface is not, either subjectively or objectively, increased to any extent.

Concomitant and *febrile* symptoms are to be observed only in exceptional cases; in those cases, namely, in which the affection spreads over large tracts of the surface, or even over the whole skin. No important complications, or sequelæ, occur in the train of this eruption. Its whole duration varies between one and four weeks. I have once seen the *Erythema papulatum* accompany a pneumonia, of which the patient died. Each one of the papules was plainly visible on the dead body, and, when they were cut through, it became evident that they were caused by hemorrhagic exudation durch hämorrhagisches Exsudat.

The *Erythema papulatum* is peculiar in the time of its occurrence, and in its liability to relapse. This affection presents itself only during those months, namely, April, May, October, and November, in which erysipelatous and herpetic eruptions are likewise most frequently observed. Moreover, its recurrence is connected with an annual type *Typus annuus*; for there are persons in whom such an erythema breaks out, during many successive years, in the course of the same month.

In some cases there appear, simultaneously with these forms of erythema, eruptions which are of a similar kind, excepting that they are vesicular. These were, consequently, classed by Willan under the name of *Herpes*. It is, however, impossible to doubt that the *Herpes Iris* and the *H. circinatus* arise from the same causes as the *Erythema Iris* and the *E. annulare*, and differ only in the fact that, in the first two affections, vesicles running an acute course are developed, which are associated in groups, and surround a common centre.[1] All the other characters are the same in the two groups of diseases, and the opinion long since expressed by Rayer, that the *Erythema Iris* and the *Herpes Iris* are mere modifications of one affection, is, doubtless, correct. There is, however, a practical advantage in retaining both these terms, because doing so enables us, not only to adhere to the definitions of the two diseases (*Herpes* and *Erythema*), but also to indicate at once, by the name which we employ, which form is present in any particular case.

We are in a state of complete ignorance as to the cause of these erythemata. They are certainly never produced by local irritation; and no disease is known to us (with the exception, perhaps, of cholera),[2] in the course of which they *regularly* present themselves.

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[1] This point will be more fully discussed in the chapter upon Herpes.

[2] The rash which breaks out in epidemic cholera is, indeed, generally regarded as a *Roseola*, and described as the *Roseola cholerica*. But, in my opinion, it would be more correctly termed an *Erythema papulatum*. In the cholera epidemics which have occurred in Vienna I have observed it in about one per cent. of the cases, and chiefly in those which terminated favorably. It generally made its appearance quite at the end of the disease, when the choleraic symptoms had subsided, and during the secondary fever. It occupied the backs of the hands and feet, and also the forearms and legs; and it had rather a bluish-red or livid colour. It generally survived the proper choleraic symptoms, not passing into any other form of erythema (such as the *E. annu-*

I have seen these affections chiefly in young subjects, who were, in other respects, perfectly healthy. They are more common in the male than in the female sex; but I have never been able to discover any predisposing cause for them in the patients themselves. These erythemata are often ascribed to catching cold, or to errors of diet, or to mental emotions; but unless the real existence of these conditions can be proved, I regard such expressions as mere commonplaces and shibboleths (Gemeinplätze und Schlagworte); and, rather than avail myself of them, I shall confess that the cause of these diseases is altogether unknown to me. It is certain that they do not owe their origin either to the imbibition of alcoholic liquors, or to eating any particular kind of food, whether sour, sweet, or bitter, whether of animal or of vegetable nature.

The treatment of these erythemata must be purely expectant. All local applications have proved useless; and internal remedies are, from the nature of the case, superfluous; for, as I have stated, the complaint terminates spontaneously without leading to any evil consequences, and within four weeks at latest.

B. *Erythema nodosum.*

Differing from the affections last described in its form, seat, and course, and also in the symptoms by which it is accompanied, the *Erythema nodosum*, or *Dermatitis contusiformis*, must be described as an independent malady. With most other writers, I apply these terms to an affection consisting of tumours (Geschwülste) of a pale-red colour, raised above the level of the skin, and either semi-globular or oval in form. These swellings are tender on pressure, and are observed chiefly on the lower limbs.

lare, *E. iris*, or *E. gyratum*), but remaining as an *E. papulatum*, sometimes even for a fortnight. Indeed, patients in the hospital, convalescent from cholera and presenting this eruption, were transferred for treatment to the department for diseases of the skin. The affection ran the same course as in other cases, and ended as usual in slight desquamation, and in the deposition of pigment in small quantity. [A note from Prof. Hebra informs me that during the present year (1866) this rash, in a macular or papular form, has been observed in about the same proportion of cases of cholera.—ED.]

According to the statements of Rigler ('Die Türkei und deren Bewohner,' Wien, 1842, ii Band, s. 44), and of Gustav von Gaal, this form of erythema prevails endemically in the provinces of European Turkey.

In some cases, the outbreak of this form of erythema is preceded by slight febrile disturbance, and even by shivering. But sometimes the attention of the patient is first directed by his senses of sight and touch to the presence of the semi-globular protuberances. These are generally of different sizes, the smallest being perhaps of the size of peas, the biggest as large as a man's fist. They are, for the most part, perfectly distinct from one another. They have at first a pale rose-red colour, with a slight tinge of yellow. Afterwards they become dark-red, and then livid; and when the red colour has faded, a yellowish coloration (Pigmentirung) remains for a considerable time. These swellings, in fact, pass through the same changes of colour which are observed in the bruises produced by local injury; and hence the name *Dermatitis contusiformis,* which has been applied to this affection by several authors.

The number of these tumours (Knollige Hervorragungen) varies in different cases. Sometimes they are confined to the legs below the knees, and are few in number, at least ten of them, however, being present. Their course is then such as has been above described. In other cases, a second or even a third eruption of these tumours takes place, affecting each time parts previously free from them, so that the thighs, forearms, and upper arms, the trunk, and even the face, are, in succession, covered with them. The duration of the disease as a whole is of course prolonged by the occurrence of these repeated attacks; and the sympathy of the system generally is likewise shown by the fact that paroxysms of fever, of more or less severity, precede each fresh outbreak. Moreover, these exceptional cases of *Erythema nodosum,* in which the eruption is so extensive, are attended by loss of appetite, depression, sleeplessness, or, in other words, by general malaise. However, none of the more important organs of the body are ever especially attacked; and the extent to which the skin is affected is surely in itself sufficient to account for the febrile symptoms.

Whether this form of erythema is partial, or diffused over all parts of the body, it always terminates within from two weeks to a month, without undergoing any changes other than those which I have mentioned. In particular, these tumours never suppurate or break down into abscesses. So, again, *itching* is never among the symptoms of this disease, painful sensations alone being produced by it. Lastly, the redness of the individual tubercles never spreads to the skin around them; a character which distinguishes the *Erythema nodosum* essentially from furuncular affections, erysipelas, and urticaria, as well as from the other varieties of erythema already described.

It is very probable that, in its pathological anatomy, the *Erythema nodosum* is allied to absorbent inflammation, and likewise to the erysipelatous diseases; and the same thing may, perhaps, be said also of the other erythemata. Indeed, it admits of no doubt whatever, that the morbid process concerned in some cases of *Erythema nodosum* is essentially an inflammation of the lymphatic vessels. In fact, we see instances in which the tubercles are arranged longitudinally in the course of these vessels in such a way as to present the ordinary appearance of a lymphangioitis. However, it has not hitherto been possible, either during life or by post-mortem examination, to furnish a complete proof that the seat of such affections is to be sought exclusively in these structures, and therefore the proposition that these exudative erythemata are merely lymphangioitides is at present nothing more than a very probable hypothesis.

The *Erythema nodosum* is observed most frequently in the female sex; but men likewise are sometimes affected with it. In either sex, it occurs more commonly between the ages of fifteen and thirty years than at any other time of life.

As I have already stated, all these forms of erythema come to an end spontaneously within a definite period, and leave behind them no ill effects. Moreover, they invariably terminate in recovery. Hence it is quite unnecessary for me to enter into any details as to their treatment. I have merely to mention, that in the *Erythema nodosum*, and indeed in all the erythemata, we should avoid the use of any active local applications for the relief of the pain caused by the cutaneous affection. Cold wet rags may be employed for this purpose; or if it is necessary to prescribe something, Goulard water may be ordered. Or, should cold be disagreeable, warm fomentations may be used; and, for this purpose, some simple infusion, such as the *infus. malvæ*, or the *infus. jaceæ*, may be prescribed. These applications do not annoy the patient, and in no way disturb the natural course of the disease. Some medical men, however, suppose that the tincture of arnica is a perfectly harmless remedy in the *Erythema nodosum*, and in similar affections. But I would give a friendly warning to those who advocate its use; unless, indeed, they propose to employ it homœopathically and in infinitesimal doses (als Hochpotenz). In the proportion of a drop of the tincture to a pail of water, this substance may certainly be applied without any risk of doing harm. But I have in practice had abundant occasion to observe that the tincture of arnica, even when much diluted, acts most injuriously upon the skin of some persons. I have frequently seen eczema or dermatitis excited by the assiduous application of lotions containing this drug, in the treatment of slight bruises or sprains.

If, in a case of *Erythema nodosum*, the symptoms generally suggest the administration of some particular internal remedy, we must act in the same way as though the cutaneous affection did not exist. This in itself requires no such treatment. But when the patient at the same time suffers from attacks of intermittent fever, quinine is of course indicated. Again, bitter remedies may be prescribed, if the appetite is bad; laxatives or purgatives, if the bowels are confined; and, lastly, anodynes, if the patient cannot sleep.

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PELLAGRA.

BY THE LATE PROFESSOR MAYR.

(*Pellis Ægra, Risipola Lombarda, der lombardische Aussatz, Mal Rosso, Mal del Sole, Mal del Padrone, Cattivo Male, Male della Vipera;* in Spanish, *Mal de la Rosa.*)

This disease was first fully described in the middle of the last century, by Frapoli, Odoardi, Gherardini, Strambio, and others. It prevails endemically, but chiefly among the poorer classes of the population, in Lombardy, Piedmont, Venetia, and the South of France.

The erythema observed in this complaint is only one of the symptoms of a general and deeply seated malady, which destroys the organism.

The eruption appears, during spring and summer, on those parts of the body which are exposed to the rays of the sun. Thus, it affects the hands (and particularly the backs of the hands), the forearms (on their extensor surfaces), the neck, and those parts of the chest and back which are not covered by the shirt. It is chiefly in women, in whom the countenance is more exposed to the sun, that the rash occurs on the face; for men generally wear straw hats while at work, whereas women have a less suitable covering on their heads. When the face is affected, the parts which become reddened are the dorsum of the nose, the cheeks, and sometimes the forehead.

When not very severe, the eruption generally subsides spontaneously on the approach of autumn or winter, as the weather becomes cooler. It then leads to a trifling desquamation, and leaves behind a slight deposit of pigment. But if the patient should again expose himself during the next summer to the bright rays of the sun, the erythema returns with greater intensity than before.

At the same time that this cutaneous affection makes its appearance, the patient suffers from muscular weakness and mental depression. When at work, he soon gets tired, and is obliged to rest; and he becomes silent and melancholy. This condition, which often goes on for several successive years, is termed by Italian authors the first stage of pellagra.

The second stage is regarded as commencing at the time when certain new and severe symptoms set in, or when those previously observed undergo a marked aggravation. The fresh symptoms which now present themselves do not concern the eruption, but rather indicate the progress of the internal malady. Thus, the patient is attacked with severe headache, giddiness, cramps, rigidity of the muscles of the neck and limbs; and his senses and intellectual faculties become impaired. The face acquires a look resembling that of lunatics (Geisteskranken); indeed, these poor creatures often at last fall into a state of dementia or of melancholia, which last is generally of a religious kind (Melancholia religiosa). Sometimes, symptoms resembling those of delirium tremens set in, in which the patient is irresistibly impelled to commit suicide, and especially to drown himself (Hydromania). Death occurs either by marasmus, colliquative diarrhœa, or dropsy; or, again, as a result of the acute inflammation of some internal organ.

The science of pathological anatomy has, as yet, contributed nothing towards the explanation of this mysterious malady. Ozanam states that, on post-mortem examination, he found the brain and the thoracic organs healthy, and that the liver and spleen alone presented morbid changes, which resembled those observed after intermittent fever, and in rachitis and chlorosis. The most numerous details as to the appearances observed after death are, however, given by Labus.[1] According to this writer, the arachnoid is found opaque and thickened; the substance of the brain and spinal cord atrophied and indurated; and the cerebral ventricles dilated and filled with an increased quantity of serum. He also states that the lungs are in parts hyperæmic, but the liver and intestines empty of blood, and that the alimentary canal (especially the small intestine) is generally observed to be contracted in a great part of its length.

When the erythema of pellagra has made its appearance for several successive years, its colour becomes much darker, and the part affected is also found to be covered with a deeply pigmented brown or black epidermis. The skin also feels hot to the touch; and the patient now complains of a burning pain, and, in some cases, of occasional sensations of itching. When these darkly pigmented patches of cuticle have become detached in the form of brownish black, thick, leathery masses, the surface of the skin beneath is seen to be thickened over a certain well-defined area, and to present a deep-red hue. Its colour is now generally permanent, no longer disappearing beneath the pressure of the finger, as it did when the disease first began.

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[1] Dr. Pietro Labus, 'La Pellagra investigata sopro quasi ducento Cadaveri di Pellagrosi,' &c., Milano, 1847.

Thus the natural appearance of the skin becomes altered and deformed; and it was this which gave origin to the name *Elephantiasis Italica*, proposed by Dr. Mason Good. It constitutes what is termed the third stage of pellagra.

According to Strambio and Ozanam, however, who are trustworthy authorities, certain cases of this disease occur in which the erythema is wanting, the only symptoms being such as indicate an affection of the brain and spinal cord.

The course of pellagra is protracted; this disease generally lasts from three to five years, and may even, though less frequently, have a duration of eight or twelve years. A perfect recovery from it is very rare; persons who have been attacked generally remain stupid and incapacitated for every kind of work. Fewer men than women suffer from pellagra, and children are still less frequently affected by it. The period between thirty and fifty years of age is that at which this malady is most common.

The statements of Ozanam and other authors, that this disease, though not contagious, is hereditary, may easily be explained by the consideration that the injurious influences which cause it generally act upon all the members of a family at the same time, or at any rate upon several of them, and that, in consequence, parents and their children are often attacked together.

Writers upon pellagra ascribe this disease to different causes. Some think that it is due to the wretched circumstances of those who most frequently suffer from it. Indeed, they are, as a rule, poor country people who are constantly exposed to the sun's rays, and have to do the hardest labour on scanty food, and in a hot, dry atmosphere. Inhabitants of towns, and persons in good circumstances, are never affected with pellagra. But there are other countries, in the same latitudes, in which this disease is not met with, although the inhabitants of these countries live under exactly similar conditions. Hence it seems extremely likely that other causes are required for the generation of pellagra, in addition to the injurious external influences already referred to.

The opinion that this complaint is caused by living upon maize (pollenta) is the one which is most generally maintained by Italian the antiphlogistic method of treatment is, unhappily, still carried to the furthest possible extent. Each time the patient becomes at all excited, he is forthwith bled. Indeed, one finds, in the Italian hospitals, not a few luckless patients, affected with pellagra, who, in the course of a single year, have undergone venæsection as many as a hundred times, and yet have not died. Fortunately for these poor creatures, this procedure is gradually being more and more completely given up, and physicians are contenting themselves with a more rational line of practice.

For, by giving pellagrous patients, instead of the bad pollenta, a good mixed diet, and particularly meat and milk, and by keeping them in well-administered and well-managed hospitals, these unhappy beings may be restored to perfect health, without any other treatment whatever. Ordinary tepid baths, but especially salt-water baths, are praised by some writers. Washing the surface of the part with milk, whey, or infusion of mallow—or, on the other hand, with lime-water, or a dilute solution of sulphate of iron—is recommended as a cure for the eruption. But it is probable that this end would be attained quite as quickly, without any such applications, under the influence of the above-mentioned favorable conditions.

ACRODYNIA.

(*Erythema epidemicum*, seu *Acrodynia*.)

I think it necessary, for the sake of completeness, to mention this disease, which prevailed epidemically in Paris in 1828 (as we learn from the description of it given by Alibert), and was also observed, according to Hirsch, in the years 1829 and 1830.

The symptoms of this malady were the following:—The hands and feet of the patient became reddened and swollen; he complained of sensations of formication or pricking, or even of throbbing pains, such as are produced by severe burns. In some individuals, the reddened patches presented no further changes, except that they underwent desquamation, and became the seat of a deposit of pigment; but in others there arose vesicles and bullæ, which afterwards burst and allowed their contents to escape. In these cases, again, as in the others, desquamation occurred; and, in the course of it, large and very thick pieces of cuticle often peeled off. In many instances, other parts of the skin, besides those already mentioned, became affected with similar red maculæ. Such patches, for example, appeared on the thighs, legs, and forearms; and, in these regions, some of them had a purple or violet colour.

But what appeared the most extraordinary symptom of acrodynia, to those who observed this epidemic of the disease, was the black colour, as of soot, presented by the surface of the abdomen, chest, and axillæ, so that the skin of the patient resembled that of a chimney-sweep. In some persons, however, the surface did not display this appearance, but rather looked as if covered with cobwebs. Moreover, the epidermis, in other cases, became dry, hard, and leathery (schwielig character), and rubbed off in the same way as in those who have been exposed for some time to the heat of the sun.

In addition to these symptoms, the patients were afterwards attacked with numbness of the lower limbs, so that, in walking, they could not feel when their feet touched the ground, and, therefore, were obliged to be assisted by others. At the same time, their hands and feet became affected with involuntary trembling movements; and the pain in them was often so severe as to be compared to that caused by tearing out the nails with a pair of forceps. Vomiting, diarrhœa, colic, dysentery, suffocation, and spasmodic attacks of coughing, and ophthalmia, were also among the symptoms observed in these cases, and often put an end to the life of the patient.

In the opinion of the physicians of the day, such as Chomel, Recamier, Chardon, and others, this affection bore a close resemblance to pellagra and to ergotism, and, like those diseases, was very probably caused by the employment of grain in a damaged condition.

As I propose in this place not to give a complete description of acrodynia, but merely to point out the position which it occupies in my system, and to draw the profession's attention to this very interesting disease, I shall say no more concerning it, and refer those who desire more detailed information to the work of Dr. Hirsch,* of Danzig. This book is an appendix to the 'Handbuch der speciellen Pathologie und Therapie,' of which the German edition of the present volume forms a part.

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* 'Handbuch der historisch-geographischen Pathologie.' Erlangen, 1859–1864.

II. ROSEOLA.

(*Rosalia, Rubeola, Rötheln, Rütteln, Wiebeln, Feuermasern, der rothe Hund.*)

Under the name of *Roseola,* Willan describes a group of cutaneous affections, in which, besides the *R. infantilis, R. variolosa,* and *R. vaccina* (which I place among the Hyperæmiæ), he includes the *R. æstiva, R. autumnalis, R. annulata, R. miliaris,* and *R. typhosa.* The example of this writer has been followed by most of his contemporaries and successors, not only in England, but also in France and Germany. Indeed, in works on diseases of the skin, roseola occupies a position of some importance, appearing by the side of morbilli and scarlatina as a third exanthem. Unbiassed observation, however, shows that such cases of roseola are either forms of measles, of slight intensity, in which the catarrhal affection is nearly or altogether wanting, or instances of mild and imperfectly developed scarlatina; or, on the other hand, that they might just as well be included under the head of Urticaria. It is, in fact, quite unnecessary to describe by the name of roseola or rubeola (Rötheln), a special exanthematic eruption. Indeed, this view has already been maintained by many physicians in different countries; so that, in putting it forward, I am asserting nothing absolutely new, but am rather joining the side of certain other writers, who deny the existence of a *Roseola substantiva.*

It may, however, be well to criticise in detail the forms of roseola admitted by Willan. Now, in the first place, experience does not warrant the recognition of a *R. æstiva,* and a *R. autumnalis.* For, to be justified in admitting these species, we ought to find one particular rash appearing principally during summer, and another more often in autumn. Moreover, these affections ought to be distinguished not only by occurring at different seasons of the year, but also, and mainly, by peculiarities in their symptoms. As for the differences in the appearance of these eruptions, it would seem, from Willan's plates,[1] that the *R. æstiva* consists of maculæ grouped in a serpentine form, while the *R. autumnalis* has rather a discoid cha-

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[1] Op. cit., plate xxvi.

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racter. So far as I know, however, these peculiarities have been recognised by no other dermatologist. Again, Willan states that the *R. æstiva*, "at first red, soon assumes a deep roseate hue;" while the colour of the *R. autumnalis* "is very dark, so that, at a distance, the skin appears as if stained with the juice of black cherries or mulberries." This, however, is evidently erroneous; unless, indeed, it refers to some cutaneous disease which is extinct, and at the present day no longer met with. As for the *R. annulata*, it would be difficult to distinguish between it and the *Erythema annulare*, and the separation of these affections is clearly inadmissible.

Hence, I believe myself to be facilitating the study of dermatology, and moreover to be on the side of truth, in denying absolutely the existence of any one of these three forms of roseola; and I hold exactly the same opinion with regard to the *R. miliaris*, of which I shall say all that is necessary, when describing the forms of *miliaria*.

It is otherwise with the *R. typhosa*, an affection which is mentioned by Willan, but only cursorily and at the end of his account of the roseolæ. It is, however, evident from the description which he gives of this rash, that Willan was accurately acquainted with its appearance. He speaks of it in the following words:[1]—"In the typhus or contagious nervous fever, an efflorescence also takes place occasionally, resembling in its distribution the specimen of roseola exhibited in plate xxvi, fig. 1, but of a darker hue. I have observed such a rash on the fourteenth day, in a case of fever, which terminated on the seventeenth day. In other cases it precedes the formation of purple spots or vibices; and in others it is seen early in the disease, but remains only for a short time, without any material consequences." There is a perfect agreement between this description of Willan's and the results of the observations which I have myself had an opportunity of making. I also recognise, in this form of roseola, a symptomatic eruption or skin affection accompanying typhus fever,[2] and taking the form of dark-red maculæ or circles. It is seated principally on the limbs, and makes its appearance at different periods of the disease; sometimes quite at its commencement, in other cases only towards its end. It does not in any way modify the course of the fever.

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[1] Op. cit., p. 451.

[2] In answer to my inquiry, to which form of fever the remarks in the text are intended to apply, Prof. Hebra states that he means the macular rash, which occurs early in the "typhus exanthematicus," and which is sometimes en in the course of "ileo-typhus" (enteric fever). In a previous note, however, he told me that he generally uses the term "typhus" to indicate the ease "in which the spleen is enlarged, and the Peyerian glands swollen." is form of fever (enteric fever) is the most common in Vienna.—[Ed.]

In some epidemics this eruption is of unusually frequent occurrence; but no certain conclusion can be drawn from this fact as to the benign or malignant character of the prevailing malady. The *Roseola typhosa* is followed by a slight desquamation, and leaves behind it a deposit of pigment; but it is not liable to any other changes. The reason for the appearance of this rash in cases of typhus is as yet unknown. But the fact that no change in the course of the fever has been observed to be produced by either its presence or its disappearance, renders it quite unnecessary to have recourse to any therapeutical interference, so far as the roseola is concerned.

III. URTICARIA.

(*Nesselsucht, Nesselfieber, Nesselausschlag, Nettlerash, Febris urticata, Essera, Porcellanfriesel, Cnidosis, Wiebelsucht.*)

Urticaria is characterised by the development of wheals (Quaddeln, *Cnesmi*), of a white or red colour, and is accompanied by sensations of stinging or itching, like those produced by the stinging-nettle (*urtica*). This rash appears suddenly, is of very brief duration, and is followed by no desquamation.

The English, Latin, and German names for it have reference to the effects produced on the skin by contact with the urtica. The Arabian physicians and those of the middle ages termed the affection Essera (Porcellanfriesel). It has also been divided into two diseases, the one acute, the other chronic; the former being called the *Febris urticata* (Nesselfieber), and the latter receiving the name of *Cnidosis, Cnesmus* (Nesselausschlag und Wiebelsucht).

This eruption was known even to Celsus, but was then confounded with the vesicular affection (sudamina) caused by sweating. The Arabians described it under the name of Essera, as the typical (ausgeprägt) form of disease, in which wheals are present. Sydenham placed it among the erysipelatous inflammations (erysipelatoses), and his example was followed by Fuchs and the natural-historical school. Nettlerash has often been confounded with scarlatina or with miliaria (Friesel): indeed, this is evident from the existence of such expressions as Scharlach-Nesselfieber and Porcellanfriesel.

A detailed account of the literature of this subject may be found in special treatises on diseases of the skin, and particularly in that of J. Frank. More recent works merely contain observations of individual cases. (*Cetta, Vicent.*, 'Diss. de Urt.,' Ticin. reg., 1842. *Velten*, "Ueber die Natur der Quaddeln," 'Med. Correspondenz-blatt Rhein- und Westphälischer Aerzte,' Aug., 1843.)

Urticaria sometimes makes its appearance without any prodromi having existed, and without any disorder of the general health, the patient's attention being drawn to the presence of the rash only by the itching which he experiences, and by the reddened state of his skin. In other cases, however, this eruption is preceded by feelings of anxiety and malaise; or it may accompany fevers attended with gastric or catarrhal symptoms; or, lastly, it may be associated with intermittent fever (J. Frank).

The rash may either affect at once the whole cutaneous surface, or it may be partial, being confined, for example, to the face or limbs. Its invasion is sometimes sudden; in other cases, the eruption is developed successively on different parts of the body, at more or less distinct intervals. After having been annoyed by sensations of tension or itching, by which he was involuntarily compelled to scratch himself, the patient finds that the skin has become hot and red, and is covered with wheals, which are at first detected more readily by touch than by sight.

These wheals may be either paler or redder than the healthy skin. Those which are white are often surrounded by a very small red border (Halo). Severe itching and stinging are present, the intensity of these sensations being proportionate to the extent of the efflorescence.

Urticaria is remarkably *fugitive* and *erratic*. The wheals often vanish suddenly from one part of the cutaneous surface, only to reappear at some other point. Or, again, they pass off altogether, and then, after a longer or shorter interval, break out a second time. Under the action of artificial warmth, or when fever is present, this rash becomes developed to a greater extent, and gives rise to more irritation.

Nettlerash often makes its appearance in the course of other febrile or non-febrile complaints, without our being able in every case to prove that it is a regular part of the symptoms which characterise the disease (eine Theilerscheinung des ganzen Krankheitsbildes darstellt). This fact, of course, enables all those writers who ascribe every cutaneous affection to some internal malady, to assert, when the rash suddenly disappears, and the other disease at the same time becomes aggravated, that metastatic deposits of the *materia peccans* in some internal organ have taken place. Indeed, some observers have been led, by their fondness for recognising metastatic processes, to ascribe to the subsidence of the urticaria the occurrence of ophthalmia, œdema, or even inflammation of the brain.

The signs that this efflorescence is beginning to decline are, the fading of the inflammatory areola, the cessation of the painful itching, and the circumstance that the wheals feel softer than before. The spots at which wheals were present may be distinguished, for a very short time after the disappearance of the rash, by having, for the most part, a pale yellow colour, or, at any rate, by being of a colour different from that of healthy skin.

Urticaria is not followed by *desquamation*. At spots which have been injured by the repeated rubbing and scratching, there appear either white linear excoriations, due to the tearing apart of the different layers of the cuticle, or (should the scratching have been still more severe) small black crusts, produced by the drying up of blood which has escaped from the vessels of the cutis.

This complaint may be either altogether unattended with fever, or associated with febrile symptoms. In the first case, no other affection whatever is sometimes to be discovered; but, in other instances, signs of gastric disorder are present, such as a furred state of the tongue, loss of appetite, nausea, vomiting, and diarrhœa. On the other hand, in cases accompanied by fever, the symptoms are quite as variable as in any other febrile complaint. Indeed, this differs from the preceding form of urticaria only in the presence of acceleration of the pulse, and increased heat of skin, and also of languor, depression, and muscular weakness.

Each individual wheal remains visible only for a very brief period; and when several of them are formed simultaneously, they all subside within a short space of time. In other words, the course of any one eruption of nettlerash is invariably acute. But it often happens that fresh wheals arise in succession, either every day, or at longer or shorter intervals, and, at any rate, before the disappearance of those previously developed; and thus, by the constant repetition of these attacks, there is produced [illegible].

Hence the duration of this disease must be looked upon as extremely variable. The eruption in many cases remains visible only for some hours (*Urticaria fugax*), or it persists during a few days (*Urticaria* [illegible]). But in other instances, after having completely subsided, it recurs at the end of a longer or shorter time (*Urticaria intermittens*); or it may linger for many months, or even years, never vanishing altogether, but leaving each part in turn only to reappear at some other spot (*Urticaria perstans*, seu [illegible] Nesselsucht).

Urticaria is not in itself a disease of any great importance, nor does it ever terminate fatally. Hence the only cases in which it would be necessary to give an unfavourable prognosis would be those in which this eruption should accompany some other dangerous malady, by which in fact, and not by the urticaria, the death of the patient would be caused.

The most transient forms of nettlerash are those which are attended by slight fever, and are produced suddenly by some cause which is in operation only for a short time; whereas the probability that the course of this affection will be protracted increases in a direct ratio with the size of the wheals, with the frequency of their migrations to fresh parts of the cutaneous surface, and with the absence of febrile disturbance when new outbreaks of the eruption occur. That form of urticaria which is merely a complication of some other complaint does not in any way increase the severity of the primary disease. Hence the prognosis of this is not at all modified by the presence of the efflorescence on the skin.

Urticaria may be developed in any part of the cutaneous surface; but it presents certain peculiarities according to the region affected by it. When it occurs on the face, it generally produces an œdematous swelling, especially of the eyelids and lips; the wheals, however, are less distinct than usual, and the rash, for the most part, assumes the character of an [illegible], and consists of red lines and striæ. The neck is comparatively rarely the seat of this eruption, which is, however, more commonly seen on the chest and back, where, as on the face, it often takes the form of striæ, and, sometimes, of peculiar wavy lines. On the limbs it is observed less frequently than on the trunk. When nettlerash affects the neighbourhood of a joint, the skin over the articulation becomes swollen and œdematous. If the hands and feet are attacked by it, the patient often complains merely that they feel as if covered by some woollen substance (klagt über ein Gefühl von Pelzigsein), and no particular change in the appearance of the skin of these parts is to be detected. In some cases, however, the fingers and toes become so swollen, that their movements are interfered with.

Urticaria may be combined with many other cutaneous affections, both acute and chronic. Thus we often observe wheals scattered more or less abundantly over the surface of the skin in cases of morbilli, and of the milder and more transitory varieties of scarlatina. Again, wheals frequently appear, as a result of scratching, in those cutaneous diseases which produce great irritation, such as lichen, scabies, eczema, and prurigo. But the following combinations of urticaria with other affections are of greater importance, and may even sometimes give rise to difficulties in diagnosis.

(1) With *Erythema*. (*Erythema urticans.*)—In these cases the intervals between the wheals are covered by an erythematous rash. This likewise spreads to other parts of the cutaneous surface; and at these spots wheals also are subsequently formed. The erythema, however, is for the most part artificial, being caused by the patient scratching himself. Hence this affection differs very little from ordinary urticaria.

(2) With *Miliaria, Herpes,* or *Pemphigus*. (*Urticaria miliaris, vesicularis* s. *phlyctænodes,* et *bullosa.*)—In these affections the vesicles or bullæ develope themselves chiefly upon the surface of the wheals, and not so frequently upon the surrounding areolæ. Such an eruption bears at first sight a considerable resemblance to a herpes, a pemphigus, or an erysipelas bullosum.

(3) With the papular form of follicular inflammation. (*Urticaria papulosa, Lichen urticatus* of Willan.)—In this affection the wheals are of a pale-red colour, and are at first not bigger than hempseeds; but they afterwards reach the ordinary size, and then again subside into their original form. Finally they disappear, leaving deposits of pigment behind them.

(4) With *Prurigo*.—This is observed chiefly in children; in whom, according to my experience, the cutaneous affection which afterwards presents the characters of prurigo begins with the formation of wheals exactly similar to those of urticaria. It is only at a later period of the complaint that the pruriginous papules make their appearance.

In the great majority of cases which come under our observation, urticaria is *idiopathic*. But it not unfrequently appears as a concomitant affection in the course of febrile complaints; under such circumstances, it is to be regarded as merely *symptomatic*, and not at all as indicating a *crisis* in the primary disease. Besides accompanying catarrhal affections of the respiratory organs and of the chylopoietic viscera, urticaria is also observed in typhoid diseases (bei Typhen), and in tuberculous and rheumatic complaints.

Moreover, it has been asserted that it may occur in combination with ague (*Febris intermittens urticata* of J. Frank).[1] The rash is said to appear at the commencement of the hot stage, and to subside when the fever passes off, without leaving behind any trace of its presence. I have never had an opportunity of seeing urticaria as a complication of intermittent fever. Indeed, I am disposed to infer, from the description given by J. Frank, that in the epidemics to which he refers (and which are said to have occurred at Pavia in 1794, and at Willna in March and April, 1812) the eruption was not an urticaria, but a *scarlatina partialis*.

Diagnosis.—In the description of urticaria, I have stated that this cutaneous disease is characterised by the development of wheals (or of papules which subsequently become wheals), by the presence of itching, by the short duration of the individual wheals, and by fever being, as a rule, absent. These symptoms are so conclusive as to the nature of the eruption, that, except in a very few instances, it seems unnecessary to lay down the differential diagnosis between urticaria and other skin affections.

1. In the first place, this rash is distinguished from those described as the *Erythema papulatum*, *E. tuberculatum*, *E. nodosum*, *E. annulare*, and *E. Iris*, by the fact that they occupy certain special parts of the cutaneous surface. Moreover, itching is absent in these complaints, but present in urticaria.

2. Scarlatina and morbilli differ from it in their typical course, in being accompanied by affections of the throat or air-passages, and in the regularity with which the rash is distributed over the skin in these diseases. For the eruption of urticaria is observed, in most instances, on parts only of the cutaneous surface; and concomitant symptoms are either altogether wanting in this disease, or, if present, are of an entirely different kind from those which exist in the exanthemata.

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[1] J. Frank, 'Die Hautkrankheiten,' Leipzig, 1843, Band i, p. 155.

3. Urticaria requires to be distinguished from erysipelas chiefly when the face is the part affected. The principal differences are, that in the former disease the redness is less intense, but that the serous infiltration is greater, and consequently the swelling more doughy, in urticaria than in erysipelas.

Morbid anatomy.—Having already [1] expressed my views in reference to the nature of wheals, I have only to repeat that they arise from an infiltration of serum into the superficial part of the papillary layer of the corium and between the layers of the epidermis. The red colour which they present in some cases (*Urticaria rubra*) is due to the existence, in addition, of an hyperæmic state of the vessels of the papillæ; whereas, in the *Urticaria alba*, the hyperæmia is limited to the periphery of the wheals, and so produces the red areola; those parts of the skin which are actually the seat of the wheals being rather anæmic than hyperæmic in this form of the affection.

No valid objection to the view which I have taken of the nature of this eruption can be drawn from the sudden way in which it appears and disappears. For exudations are formed with as great rapidity in affections of other organs, (for example, in the case of the eye); and in these instances the effused matters are reabsorbed into the blood no less quickly, as soon as the obstruction to the circulation is removed.[2]

Etiology.—Urticaria is either produced by the direct action of *external irritants* upon the skin, or by the operation of *internal causes.*

Among the external agents which generate it are the stinging-nettle (*urtica*), and the stings of certain insects (such as bugs, gnats, the *Culex pipiens*, the caterpillar of the *Gasteropacha processionea*, &c.). The name *Urticaria traumatica* is applied to it when produced in this way. In the centre of the wheals may be observed a point of a darker colour, which is the seat of the puncture. In the case of the nettle, the affection seems to be caused by the action of sulpho-cyanogen (Cyanschwefel), which escapes from the glands on the surface of the leaf as soon as their points are broken off. When arising from the stings of insects, it appears to be caused either by their continued sucking (durch das anhaltende Saugen), or by their boring through the tissues of the skin[1] (durch das Eingraben); or, in some cases, by the introduction of formic acid.

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[1] *Vide* p. 11.

[2] Velten does not regard wheals as arising from an exudative process, but ascribes them to a spasmodic contraction of the surrounding part of the corium. Up to the present time, however, the only muscular fibres which have been found in the skin are those placed perpendicularly to the surface; and, until circular fibres shall have been discovered in the substance of the cutis, the view adopted by Velten will remain less probable than that which I have given.

I have already remarked that, in persons whose skin is very sensitive, urticaria may be simply the effect of constantly irritating the cutaneous surface by scratching. This form of it is the so-called *Urticaria subcutanea*. It is observed especially in patients who are at the same time affected with some other eruption attended with itching, such as eczema or prurigo; and it likewise often follows the application to the skin of resinous substances, turpentine, or the ung. terebinthinæ (*ung. digestivum*).

The *internal causes* of urticaria include the following:

1. Intense and sudden mental emotions, such as terror and anger (J. Frank).

2. The ingestion of certain kinds of food, drink, or medicine. The articles of diet which most commonly give rise to nettle-rash are, cray-fish, lobsters, oysters, fish, pork, sausages, strawberries and currants, &c. Among medicines may be mentioned the bals. copaibæ, turpentine, valerian, the semina cinnæ, the ol. anisi, and various mineral waters (J. Frank). This effect, however, is in part due to the idiosyncrasy of the patient; for whereas most persons can take any quantity of these kinds of food or medicine without ill effects, others are attacked with the eruption after having merely

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[1] Of this kind is the complaint described by Jahn ('Jena'sche Annalen für Physiologie und Medicin,' Bd. i, hft. i), under the name of *Stachelbeerkrankheit* (gooseberry-disease). It affected children or grown-up persons who were engaged in gathering gooseberries, or who had often been, for some time, close to gooseberry-bushes. These individuals were attacked by severe itching, and soon afterwards by an erythematous reddening of the skin, attended with the formation of papules. This eruption did not subside until the patients had, for some days, avoided the neighbourhood of gooseberry-bushes. Dr. Emmerich discovered a species of mite—the *Leptus autumnalis*—within the yellow points.

Similar eruptions are observed, especially during spring and summer, in women and children who, while in gardens, are touched by caterpillars or other insects, such as the little scarlet *Thrombydium Holosericeum*. This form of urticaria looks, at a distance, very like measles, particularly when it is seated on the face.

tasted them. Dr. Thomson asserts that urticaria may be caused, in a person liable to it, by partaking of any dish to which he is unaccustomed; and, in support of this opinion, Dr. Thomson appeals to experiments made by himself for the purpose of testing its truth.

3. Irritation of the alimentary canal by intestinal worms, especially the *Oxyuris vermicularis*, the *Trichocephalus dispar*, and the *Tænia solium*.

4. Certain physiological changes (such as menstruation and pregnancy) in the sexual functions of women; various pathological conditions of the generative organs, including tumours of the uterus; and, lastly, those manifold disorders of the genital system (in der Genitalsphäre) which are grouped together under the name of Hysteria, and in which we are often unable to detect any local organic disease, either during life or after death. It is now some years since I[1] showed that certain cutaneous diseases (among which I mentioned urticaria) are frequently thus associated with some pathological change in the female genital organs; and this observation has been quite recently confirmed by Scanzoni.

It has not yet been ascertained whether the morbid change in urticaria—the infiltration of the skin—is due to some nervous influence, or to an alteration in the composition of the blood (eine besondere Blutmischung). But the favorable course taken by this eruption, its being accompanied by no disease of any internal organ, the absence of sequelæ, the rapidity with which the complaint spreads, and its yet having no tendency to lead to the formation of abscesses,—all these facts are opposed to the latter supposition. We are entirely ignorant of the causes of that form of urticaria which appears in the course of certain diseases, such as intermittent fever and acute rheumatism.

It has been supposed that among the conditions which predispose to urticaria are certain states of the weather, particular seasons of the year (and, especially, the periods of transition from winter to spring and from autumn to winter), changes in the electrical tension of the air (J. Frank, Fuchs), and, lastly, the fact that the person is of a certain age. But, according to observations made here, these circumstances do not possess the influence which has hitherto been ascribed to them. It is, however, a fact that urticaria is more common when erysipelas is prevalent than at other times.

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[1] "Ueber das Verhältniss einzelner Hautkrankheiten zu Vorgängen in den inneren Sexualorganen des Weibes," von Hebra; 'Wochenblatt der Ztschrft. d. Ges. d. Aerzte,' N. 40, 1855.

This cutaneous disease is not communicable from one individual to another. Prof. Mayr performed inoculations with blood obtained by pricking the wheals, but these experiments altogether failed to transmit the urticaria.

Treatment.—The indications for the treatment of this affection are, firstly, to take away its cause; secondly, to remove the infiltration of the skin; and, thirdly, to put a stop to the itching, or at least to relieve it.

In the *acute* form of urticaria, the cause has generally ceased to be in action before the patient comes under treatment. An emetic or purgative should be given in any case in which the patient, having partaken of some unaccustomed kind of food, still complains of nausea. Generally speaking, however, it will be sufficient to direct that no food of any kind shall be taken, and to adopt an expectant mode of procedure. Medicines which bring out the eruption are objectionable.

The cause of the *recurrent* variety of this disease is often easily detected and got rid of. Thus, any particular kind of food which gives rise to it must be henceforth avoided. But when urticaria is the effect of pregnancy, amenorrhœa, or hysteria, it may often be difficult, or even impossible, to remove its cause. Again, we must not forget that this rash may be due to the irritation produced by animal parasites; and its repeated occurrence ought always to suggest the possibility of their presence. It is also well to remember that bugs and gnats are not found only among the poor, but sometimes attack even respectable people.

As we are, for the most part, ignorant of the causes of *chronic* urticaria, our treatment of it is generally limited to the use of agents which relieve the itching and tend to remove the unpleasant sensations experienced by the patient. With this object, we should keep the patient cool, directing him to wear thin clothes, or to be lightly covered in bed. He should sponge the skin with cold water; or if the eruption is confined to certain parts of the body, cold lotions may be prescribed. Douche baths, again, may be ordered; or the patient may be told to bathe in a river, or in the sea. However, the chronic variety of urticaria often resists all these measures, and will not subside until the person affected with it has changed his residence and altered his mode of life.

When any febrile disease gives rise to or is accompanied by this rash, the only modification in the treatment of the case, rendered necessary by the presence of the urticaria, is the avoidance of all heating and diaphoretic medicines.

Some have advised that the whole body should be immersed in baths to which common salt, bicarbonate of soda, or carbonate of potass has been added. This, however, is quite useless. Again, sponging the surface with dilute vinegar, or a solution of citric acid, has been recommended for the removal, or at least the relief, of the itching. It must be repeated as often as this painful sensation returns, but its effects very rarely answer to its reputation. Duchesne-Duparc[1] recommends the internal administration of the tincture of aconite, as a specific remedy for the itching. He gives a daily dose, "varying from a few drops to several grammes, according to the age and temperament of the patient." However, I have never seen any striking effects produced by this medicine, which, like arsenic and every other internal remedy, has always proved unsuccessful in the treatment of the chronic, recurrent form of urticaria.

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[1] 'Traité pratique des Dermatoses,' Paris, 1859, p. 33. M. Duchesne-Duparc states that he employs an alcoholic tincture made with the fresh leaves of the aconite; but he does not mention the strength of his preparation, for which several very different formulæ are given by Jourdan ('Pharm. Univers.,' 126). It is hardly necessary to say that the tincture of the British Pharmacopœia should not be given in a dose of "*plusieurs grammes.*"—[Ed.]

CHAPTER [illegible]

ON THE PARTICULAR FORMS.

CLASS IV.—ACUTE NON-CONTAGIOUS, EXUDATIVE DERMATOSES.[1]

A. IDIOPATHIC DERMATITIS.[2]

1. *Dermatitis Traumatica.*

Under this name I include all those inflammatory cutaneous affections, caused by agents of which the injurious effects are *mechanical*. These effects include lacerations of the tissues of the skin, followed by a hyperæmic condition of the cutis, and by the pouring out of exudation into the substance of the integument. To this form of dermatitis, then, belong the bruises (Beulen) and inflammatory swellings (with the other conditions into which these afterwards pass) produced by forcible pressure on the surface of the body, or by a severe blow or fall, or by a violent push or crushing injury. It is, however, scarcely possible to give a general description of these morbid conditions of the skin, for they present every variety of form, extent, and severity, according to the degree of force employed and the vulnerability (Vulnerabilität) of the individual. I shall, therefore, content myself with having pointed out the proper place in my system for these forms of dermatitis.

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[1] *Vide* p. 147, *supra*.

[2] It is obvious that this epithet is here (and also in other parts of this work) employed in a sense different from that in which it is generally used in this country. We speak of a complaint (*e.g.* tetanus or peritonitis) as being *idiopathic*, when it is not produced by any evident exciting cause, such as an injury. Prof. Hebra calls those diseases *idiopathic* which are not *symptomatic*, that is, not mere symptoms of some other general malady, but substantive and independent affections.—[Ed.]

2. *Dermatitis venenata.*

When treating of the idiopathic forms of the hyperæmic erythemata,[1] I had occasion to speak of an *Erythema ab acribus, seu venenatum;* and I then mentioned several substances which, in their poisonous action, alter the chemical constitution of the skin (den Chemismus der Haut verändern), and, consequently, produce this affection.

Now, when the integument is exposed for a short time only to the action of these substances, or when its resisting power is great, a condition of hyperæmia may be the only effect of their operation. But these agents, as well as many others which likewise act chemically on the skin, may, in other cases, give rise to affections of a different kind, consisting sometimes in a simple dermatitis (attended with redness and swelling, and with the development of vesicles, bullæ, or wheals), sometimes in the occurrence of either dry or moist gangrene, with the formation of black, grey, or brown eschars, &c. For instance, the former effect is produced by the *Rhus Toxicodendron* and the *Mezereum*, and by the *Pulex penetrans;* the latter, by the strong mineral acids, the caustic potass, arsenic, and such compounds as the Vienna paste,[2] or the pastes of Canquoin or Landolfi.

The treatment of the morbid changes to which I have applied the name of *Dermatitis venenata,* and which are caused by these or similar substances, must be conducted on the general principles which I shall point out when I come to speak, under the head of *Dermatitis calorica,* of the treatment of inflammation of the skin in general.

3. *Dermatitis calorica.*

Under this name I shall describe not only those inflammatory conditions of the skin which are called into existence by the operation of *heat,* but also those produced by the action of *cold.* These are termed, respectively, *burns* and *frostbites* (Verbrennungen and Erfrierungen).

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[1] *Vide* p. 53, supra.

[2] *Vide* p. 42, supra.

a. *Dermatitis ambustionis* (Combustio).

The appearances produced on the cutaneous surface by the action of heat vary according to the *degree of temperature* to which the integument is exposed, the *nature of the medium* by which the heat is transmitted, the *extent of surface* involved, and the *constitution* of the individual. In general, we find that any elevation of the temperature of the body above what is natural (100° Fahr.) causes the cutaneous vessels to become hyperæmic, and the skin to assume a red colour. In other words, an erythema (the *Erythema caloricum*)[1] is produced, the severity and the duration of which are proportionate to the intensity of the heat. If the temperature should once have gone beyond 145° Fahr., the erythema does not subside when the action of the heat ceases, disappearing only at the end of some days, after which the part of the cuticle directly affected by the heat undergoes desquamation. On the other hand, when the temperature reaches 212° Fahr. (the boiling point of water), or is still higher, the epidermis is destroyed by it, and the cutis exposed; while, at other points, inflammatory exudation is rapidly thrown out beneath the cuticle, and produces bullæ; or, again, if the action of the heat should be continued, charring takes place, and yellow, brown, or black eschars are formed.

Thus, then, the appearances produced in the skin by burns may be considered under three heads, or as presenting three degrees of intensity.

1st Degree.—*Dermatitis ambustionis erythematosa. Brûlure* (Rayer).

The symptoms of this, the mildest form of burn, are confined to the parts affected by the heat; they consist in a reddening of the surface, of varying intensity, but disappearing beneath the pressure of the finger, in a more or less considerable degree of swelling, and in persistent pain.

The course of this affection differs in no way from that of the ordinary forms of dermatitis due to any other cause. The first change is the disappearance, by absorption, of the serous infiltration

[1] *Vide* p. 52, supra.

which occupied the cutis and gave rise to the swelling. Upon this, the epidermis becomes the seat of a more or less intense pigmentation, and is seen to be divided by numerous little cracks and fissures, so as to form minute scales. These, however, remain adherent for a while, till they are compelled to peel off by the growth of healthy cuticle beneath them. The whole morbid process then comes to an end without any further change in the epidermis or cutis, and leaves behind no trace of its existence.

These effects may be produced even by intense sunshine, if its operation be continued for some time. This, however, is observed especially in persons who rarely expose themselves to the direct rays of the sun, or whose skin is peculiarly sensitive to the influence of heat. But the action of radiant heat, proceeding from a body at a very high temperature, and kept up for a considerable time, would, no doubt, give rise to similar appearances in every individual.

2nd Degree.—*Dermatitis ambustionis bullosa.* *Brûlure vésiculeuse et bulleuse* (Reyer).

The characteristic appearance of burns of this degree is the formation of *vesicles* or *bullæ*, the epidermis being raised by serous exudation accumulated beneath it. In some cases, however, when the quantity of effusion is very large, or when the action is very rapid—or, again, when the cuticle is not strong enough to retain the fluid poured out beneath it—the bullæ quickly burst, and allow their contents to escape. Under these circumstances, neither bullæ nor vesicles are to be seen; but the epidermis, torn from the subjacent cutis, is observed either as a white pulpy layer, or as a soft white membrane, rolled up and lying on the surface of the true skin, which last is then intensely reddened, and presents numerous bloody points, produced by hæmorrhage.

The degree of swelling and pain, in this form of burn, depend partly on the extent of surface affected, partly on its anatomical position.

The following are the changes which successively occur in burns of the second degree :—The remnants of cuticle first become converted into thin, pale yellow or brownish scabs. The cutis, being deprived of its epidermis, and, as we have seen, infiltrated with blood, keeps pouring out a thin serous exudation which covers its sur-

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and is not to be removed from

cases, we require some character to indicate the severest kind of burns; and it is desirable that we should, immediately after the injury, be able to determine the presence or absence of this character. Hence I am of opinion that, for all practical purposes, the three grades which I have described are sufficient, and that we may include under burns of the third degree those forms which Dupuytren and others have spoken of as burns of the fourth, fifth, and sixth degrees.

The eschars produced by the burning and charring of the tissues vary in thickness, according to the intensity of the heat, and the depth to which the destructive action has extended; and in proportion as they are thicker, they take a longer time to become completely separated and cast off from the uninjured structures beneath, by the suppurative action which takes place around them. Within a few days after the accident, a yellow purulent border may be observed at the margin of the eschar, gradually extending more deeply towards its base, and forming a line of demarcation by which the parts charred are separated from those which remain healthy. When this has occurred at every point, the eschar falls off, leaving a more or less extensive loss of substance, or, in other words, a wound, which is generally clean and suppurating, and is covered by peculiarly sensitive granulations. The loss of substance is repaired in the usual manner, and, as the surrounding skin contracts greatly, there is formed a raised, cord-like or radiating cicatrix, which is of more or less thickness, and often, by forming contractions and adhesions, gives rise to great deformity.

The general symptoms produced by burns of the third degree arise, for the most part, not immediately after the accident, but subsequently; so that the danger of the patient's condition is not at once obvious to those who have but little experience of such cases. It is often only when the eschars have become completely cast off, and when suppuration is in progress, that febrile symptoms set in, or that the affection becomes serious, and even dangerous.

The fatal result in cases of burns is sometimes due to a state of exhaustion, itself caused by the intense action on the nervous system in general, this intense action being indicated by the presence of very great pain, or even by the occurrence of convulsions. In other instances, the cause of death is the absorption into the blood of putrid or decomposing pus. When this occurs, severe shivering generally sets in, and metastatic deposits take place in the internal organs, giving rise for the most part to lobular pneumonia or to pulmonary gangrene. Or, again, disease of some of the viscera may arise: thus Rokitansky and other pathological anatomists have observed intestinal hæmorrhage to occur after burns.

Burns of the highest degree of intensity are produced only by some intense source of heat; as, for instance, when the skin is exposed for some time to the action of flame, or when red-hot iron or other red-hot bodies are allowed to remain in contact with the skin, or, again, when the clothes have caught fire.

Prognosis.—In burns of the first and second degrees, a favorable prognosis may in general be given, the only exception being when a burn of the second degree is very extensive; as, for instance, when the whole surface of the body is *scalded*.

Burns of the third degree, however, even when of but small extent, are always dangerous injuries. According to most observers, they invariably terminate fatally when more than one third of the cutaneous surface is injured. In reference to prognosis, it is also of primary importance to consider how deeply the tissues have undergone destruction, what is the part affected, and what the *individuality* of the patient: especially what are his age, sex, and bodily constitution, and what the previous diseases from which he may have suffered.

Treatment.—The treatment of burns must, in the first place, vary with the severity of the injury. In cases in which the epidermis is uninjured, and the cutis merely hyperæmic, or the seat of hæmorrhagic infiltration, or even of serous effusion into its substance, all treatment is superfluous, except in so far as it may be required to alleviate pain, or to diminish the engorgement of the cutaneous blood-vessels. Thus, cold wet rags may be applied, or any bad conductor of heat, such as the well-known popular remedies, mashed potatoes or carrots, and clay. Some of the substances generally used, such as cotton-wool and joiner's glue, probably act through the imagination alone.

In burns of the second degree, in which the cutis is deprived of its covering at certain points, the principal indication is to prevent the access of air to those parts, so as to favour the restoration of the cuticle by the natural processes, and relieve the painful impressions conveyed by the cutaneous nerves. Hence, the bullæ should, if possible, be left untouched; or, if it is necessary to evacuate their contents, a small puncture should be made at the lowest point of each bulla, care being taken that its roof afterwards comes into contact with its floor. The applications best suited to these cases are certain well-known oily or viscid liquids (such as collodion or glycerine), or the ordinary liniment, made of equal parts of linseed-oil and lime-water, or of olive oil and yelk of egg. These local remedies will, in most instances, be sufficient. We may apply to the injured parts either the liquid itself, or compresses dipped in it, cold wet rags also being employed in any case.

It is, however, well to adopt a different treatment when burns occur at certain parts (such as the folds opposite the joints of the fingers and toes, and the flexor surfaces of the joints generally), at which there is reason to fear that adhesion of the opposed surfaces may take place, during the process of healing. Under these circumstances, the nitrate of silver may be used with great advantage. It may either be applied *en crayon*, the denuded parts of the skin being touched with it once or twice daily; or it may be employed in solution (containing equal parts of nitrate of silver and distilled water), in which pledgets of lint are dipped, which are then laid upon the spots deprived of their epidermis. The black eschars thus produced must be removed as soon as they can be separated from the subjacent parts, the caustic being at once applied, so as to form fresh eschars. This procedure must be repeated again and again, till the eschars produced by the application of the nitrate of silver adhere so firmly that it is difficult or even impossible to detach them.

A burn of the second degree, treated in this way, heals for the most part much more quickly, is not followed by raised cicatrices, and does not give rise to adhesions of the fingers or toes, or of the opposed surfaces of the joints, such as there would otherwise be reason to dread.

The preparations of lead (such as the Goulard water, the *liquor plumbi subacetatis*, or the *ung. plumbi carbonatis*) may also be applied with success in these cases. So far as my experience goes, there is no ground for the fear which some have expressed, that the lead may be absorbed and give rise to the symptoms of poisoning by that metal.

The eschars produced by burns of the *third* degree may be very thick when the tissues have been destroyed to a great depth, and their separation may, consequently, take a long time, which cannot be shortened by any method of treatment. During this period, the only local applications which should be used are such as relieve the pain experienced by the patient. For this purpose we may employ, sometimes cold wet rags, sometimes warm fomentations, the important point being to keep the injured parts moist. The various ointments and plasters are obviously useless, and even injurious; for their application would rather interfere with the separation of the sloughs, while it would at the same time favour the retention of pus and of unhealthy discharges. The employment of caustics is equally unadvisable, for they give rise to needless pain and do the patient no good whatever.

The practice of continuous irrigation, on the other hand, is of great value, whenever the situation of the burn permits its employment. Its advantage is twofold: it tends to prevent the access of air; and it also facilitates the cleansing of the raw surface, and diminishes the pain which the patient suffers. In the case of burns confined to any part of one limb, this treatment may be carried out by a most simple form of apparatus. All that is required is a can filled with water, and having a spout, which is provided with a stopcock, and connected with one end of a flexible tube, of which the expanded termination is placed immediately over the part affected. When the stopcock is slightly turned, the water flowing down the tube falls upon the injured surface, and trickles over it into a vessel placed beneath.

To enable me to carry out a similar plan in cases of more extensive burns, I have had a special apparatus constructed. This consists of a bath, six feet long by three feet broad, made of wood, and lined with copper or zinc. Exactly fitting its interior is an iron frame to which are fastened transverse bands of webbing, as in an ordinary bed. At about two feet from one end of this frame is attached a head-support, which moves on a hinge, and can be fixed at any angle by a simple piece of rackwork. The frame is covered with a blanket, and is also provided with a horsehair pillow; it does not rest on fixed supports, but is suspended in the bath by cords attached to it at either end. These cords pass over two small rollers, placed one at the head, one at the foot of the apparatus, and provided with handles, so that the whole bed can easily be raised or lowered within the bath. At the head of the bath, but at a higher level, is a vessel made of copper, which can be heated, so that the water may be supplied at any required temperature. The supply-pipe enters the bottom of the bath, the escape-pipe opening into it at the water-level. When the apparatus is in use water is kept constantly flowing through it, so that all impurities are rapidly washed away. To enable the face to be kept continually wet, or to be specially irrigated, additional small tubes, each provided with a rose, are connected with the copper vessel. These tubes may also be used for the irrigation of any part of the body, the patient being in that case kept raised above the level of the water in the bath.

Before the patient is placed in the bath, it is filled with warm water, at a temperature of 90° to 100° Fahr., according to his inclination. The water is also entirely changed every day.

A wooden cover, upon which a blanket is spread, is put over the lower part of the apparatus while the patient is in the bath. If he wishes the head also to be covered this is easily managed by roofing in the head of the bath by means of hoops, upon which blankets are placed.

It is obvious that this apparatus requires continual attendance. It might be thought that there would be some danger of the patient being drowned during sleep; but this does not appear to be the case; nothing has occurred in the course of the experiments hitherto made to suggest the slightest fear of such an event.

I have already, in the chapter on Variola,[1] cursorily alluded to this apparatus, which I have used in certain chronic skin diseases (such as psoriasis and pemphigus), as well as in smallpox and in burns. I have found by experience that persons may remain for a hundred days uninterruptedly, day and night, in a warm bath, without injury to their health. Accurate observations, written down from hour to hour, show that neither the pulse nor the respiration nor the temperature of the body has undergone any marked change in persons placed in the continual bath. There has been no loss of appetite, and the patients have continued to sleep well. The amount of urine secreted, however, has been much diminished.

I have hitherto[2] tried this method of treatment in only three cases, which are far too few to enable me to draw any conclusions as to its

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[1] *Vide* supra, p. 267.

[2] Prof. Hebra informs me by letter that, in order to favour the local action of tar or other applications, he still uses the bath in cases of various skin affections, keeping the patient in warm water for several hours, or even for a still longer time. In severe burns, although it does not save the patient's life, it always relieves the pain which he suffers. Four of these baths have been put up in the General Hospital of Vienna.

The detailed account of the continual bath in the text is taken from the de-value. I shall therefore content myself with pointing out the principles on which its application depends, and refer my readers for further information to a special work which will hereafter appear. I believe that the use of the continual bath will at any rate give results not less favorable than those of the methods of treatment hitherto employed with a similar object.

These have consisted either in the application of absorbent substances, such as powdered charcoal, to remove the gangrenous discharge and prevent its remaining in contact with the surface of the wound, or in the use of remedies which are regarded as antiseptics, such as the aqua vulneraria,[1] vinegar, pyroligneous acid, or creosote. In praise of such applications the surgical text-books say a great deal which, unfortunately, is not warranted by experience.

Other parts of the treatment, such as the removal of tissues of which the vitality is already destroyed, are matters of surgery, upon the description of which I cannot in this place enter; and I also think it unnecessary to give a detailed account of the management of the febrile symptoms, the metastatic diseases, or any of the other complications which are apt to make their appearance in cases of burns.

b. Dermatitis congelationis.

In the inflammations of the skin produced by the action of cold, gradations may be recognised which bear a general resemblance to those observed in cases of burns. For the skin is, in frost-bites, sometimes merely reddened and swollen, while, in other instances, vesicles and bullæ are formed; and in a third class of cases the cuticle is destroyed, and excoriations or even eschars make their appearance.

The slow course taken by these complaints is, however, a peculiarity which distinguishes them from the inflammatory affections of the skin set up by the action of heat. For burns—at any rate, the less severe forms of them—very quickly subside, the healthy state

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[illegible] of it by Prof. Hebra, sent with a specimen of the apparatus, placed in the International Exhibition of 1862. It is also fully described, and a plate of [illegible], in the 'Wiener Allgemeine Med. Zeitung,' No. 43, 1861.—[Ed.]

[1] A liquid obtained by distilling various aromatic herbs with dilute spirit. [illegible] 'Pharm. Univ.'—[Ed.]

being at once restored, except that there remain portions of the epidermis which has been destroyed. But in the case of frost-bites we have to deal with inflammatory action, and its results, long after the cold has ceased to be in operation.

The affections with which we are now concerned are further distinguished by the fact that a certain morbid disposition on the part of the patient is a necessary condition of their occurrence. For experience shows that when several persons are exposed to the action of cold at the same time and in the same way, some of them only suffer from its effects, the others escaping altogether.

Moreover, we observe that in some persons an extreme degree of cold is not required for the formation of chilblains (Frostbeulen) on parts of the body exposed to its influence. Indeed, even a temperature not below 32° Fahr. may produce a reddened and swollen condition of the hands and feet of young people, or, in other words, the appearances of *congelatio*. This occurs especially in hot countries, in which chilblains are well known to be more common than in colder regions; this being due to the fact that the arrangements for heating apartments are generally badly constructed in warm climates, and the rooms themselves ill-adapted for cold weather. Moreover, in these countries chilblains often affect people in good circumstances, and not merely those who belong to the labouring classes, and are consequently exposed to severe cold.

Now, we find on investigation that persons, whether males or females, who are particularly prone to these affections are of a particular constitution, and in a similar state of health. The skin is, in these individuals, of a pale colour, and often infiltrated with serum, so that the face has a doughy (gedunsen) appearance. If the patient is a girl, she suffers to a greater or less degree from chlorosis; while the males are of the so-called lymphatic constitution and of lax muscular fibre. Hence it is obvious that the same condition, namely, one of *oligæmia*, or (more correctly speaking) *aglobulosis*, is to be regarded, in both sexes, as the predisposing cause of chilblains, besides being, accordiug to my experience, associated with a special tendency to various forms of cutaneous disease. That this is really the case is surely proved by the fact that the liability to the occurrence of chilblains subsides when the bodily constitution of these individuals is altered. Thus, chlorotic girls, who were always affected with them during autumn, when the temperature was not below 43° Fahr., no longer suffer from them if their anæmic condition is removed, whether by the administration of medicines or by some alteration in their state of life, such as their being married or becoming pregnant.

1st Degree.—*Dermatitis congelationis erythematosa, Pernio* (Chilblain, Frostbeule).

This is an affection of certain circumscribed portions of the skin, which acquire a livid red colour and a somewhat tubercular (knotenartig) appearance; the colour disappears beneath the pressure of the finger. Chilblains are attended with itching, or with a burning pain; they occur especially on the fingers and toes, but may appear also on the ears, nose, or other parts of the face, or, indeed, on any part of the body which is exposed to cold of some intensity. When the temperature rises, and especially when the part is exposed to the action of heat, these appearances sometimes undergo no change, sometimes become still more marked. Under these circumstances the colour of the parts affected is altered, changing from a dark bluish-red to a bright rose-red tint.

With the exception of these slight variations chilblains remain for a long time in a stationary condition. They may, indeed, become worse at certain periods; this occurs most commonly in the cold season of the year, being, however, sometimes observed even during summer; but in that case the only alteration is an increase in the amount of redness and swelling, there being no change whatever in the essential characters of the complaint.

In certain cases, however, chilblains do undergo metamorphosis. Thus, they may become harder than usual (an Consistenz zunehmen). In other instances the skin of the part affected by them grows extremely vascular, so that they present a very deep livid hue. At the same time the cutis becomes more tough than before, and the epidermis also undergoes change, becoming thin, smooth, and satiny, being traversed by indistinct furrows, and presenting various shades of colour (schillernd).

Sometimes, again, the metamorphosis is of a different kind. Under the influence of certain mechanical conditions (such as friction or scratching, or the pressure of boots or shoes) changes occur in the exuded matters, and either a sero-sanguineous or a purulent fluid is formed beneath the epidermis, so as to produce a bleb or a pustule. The mere presence of such bullæ or pustules is attended with pain, which, however, increases when they burst, exposing the papillary stratum of the cutis. This form of the affection is the suppurating chilblain (*Pernio suppurans*, Frostgeschwüre).

These changes frequently lead to the cure of the complaint. For after the breaking down (Schmelzung) of the exudation the ulcerated surface heals over, and a cicatrix is produced, so that the part cannot readily become again hyperæmic.

2nd Degree.—*Dermatitis congelationis bullosa.*

Under the influence of a more intense degree of cold we often find that bullæ are formed, which may be of the size of hazel-nuts or even as large as goose's eggs. The fluid which they contain may be either watery and transparent or sero-sanguineous. If they are not punctured they undergo no change for some time, but at last break, upon which the tissues beneath are found to be destroyed to a greater or less depth. Indeed, when such bullæ appear on the feet and hands (their favorite seats) the bones are often exposed, the soft parts between them and the skin having been completely destroyed. The losses of substance thus produced may be considerable; indeed, entire phalanges sometimes exfoliate, their ligaments and tendons having previously sloughed away.

In less severe cases, however, the destruction to which this ulcerative process gives rise is not so extensive, and cicatrization occurs. But even then scars are always left, which interfere to some extent with the usefulness of the part.

For the production of such effects as I have been describing, it is by no means necessary that the part should have been exposed for a long time to the action of intense cold. On the contrary, these affections may be generated in the course of a few hours, particularly upon the hands and feet. They are observed most frequently in persons who have travelled long distances in carts during very cold weather, with their feet insufficiently covered, or who have been occupied in clearing away snow or in breaking ice.

3rd Degree.—*Dermatitis congelationis escharotica.*

The affections which come under this head present different characters. In some cases there appear bullæ filled with bloody

[illegible]

When the gangrenous action remains limited to the parts directly attacked by the cold, and when none of the constituents [illegible] lead [illegible]. But [illegible]

Treatment.—In considering the treatment [illegible] and frost-bites I must [illegible] the less severe forms of these affections, the great point [illegible] difficulty [illegible] the removal of the obstacles which prevent the disease from getting well. Patients, in fact, ask to be cured without being [illegible] give up the occupation which made them liable to be affected with the complaint, or having to avoid the exciting cause, whatever it may happen to be, which gave rise to it. Thus, a person [illegible] to work in the open air, and is, in consequence, tormented with chilblains on the hands, demands a remedy from the physician, but remains out of doors as much as before. And yet, when the treatment recommended does not lead to the good results which [illegible] hoped for by both patient and doctor, the want of success is attributed to the inefficacy of the remedies, and not to the fact that the cause of the complaint is still in operation. This applies also to those conditions seated within the organism itself, which have already been referred to as predisposing to these affections. It is not in our power to remove these conditions instantaneously, but till this is effected the patient will remain liable to the complaints which depend upon their presence. It is necessary to take these points into consideration before giving a prognosis, as well as in prescribing for such cases.

If we have to deal with a simple recent chilblain, affecting an individual otherwise healthy, the mildest antiphlogistic measures will be sufficient to relieve or cure the dermatitis, provided only that the patient can and will avoid all further exposure of the part to cold while he is under treatment. The horizontal posture, the application of wet rags, the use of frictions with cold water or snow, are universally known and approved remedies; and hundreds of persons affected with chilblains are every year cured by these simple methods. I consider it far wiser to employ treatment of this kind than to prescribe leeches, ice-bags, lotions of sal ammoniac, or any other of the more powerful *antiphlogistic agents*, as they are termed. For it will be found difficult to prove that the application of a leech can remove blood from a part which is hyperæmic or inflamed, without the same quantity at once passing from the adjacent tissues into the dilated vessels of the part affected. I should be more disposed to recommend the employment of scarifications, provided that the incisions are carried to a sufficient depth, for this practice does at least effect the destruction of some of the blood-vessels which go to the part, and must, therefore, relieve the tension. Whether or not any advantage is gained by prescribing lotions containing sal ammoniac, preparations of lead, alum, or other astringents, instead of merely using cold water, has yet to be proved. I do not at present admit that such applications exert any beneficial action, and, therefore, I always confine myself at first to the use of wet rags, and continue to employ them as long as they are agreeable to the patient, and until I find that the symptoms of congestion—the reddening of the surface, the increased temperature, and the perverted state of the sensibility of the part—have disappeared.

When chilblains have already existed for a long time, or have undergone a relapse, it becomes our aim, not merely to relieve the part of the blood with which it is overloaded, but also to remove the permanently distended condition of the vessels, or even to cause the inflammatory exudation to liquefy or break down and to be absorbed. To effect these objects the antiphlogistic treatment above described is scarcely sufficient, and we must rather employ local applications of a slightly stimulant nature, and such as favour the occurrence of absorption. Experience has supplied us with a considerable number of such remedies; and in some cases, if they do not completely remove the complaint, these substances give marked relief to the unpleasant sensations experienced by the patient, and particularly to the itching. Under this head may be enumerated the vegetable and mineral acids (such as the pyroligneous acid, the dilute nitric or hydrochloric acid, and lemon juice), creosote, chloride of lime (Chlorkalk), caustic lime (Aetzkalk), tincture of iodine, collodion, camphor, &c.

Various applications are popularly employed for the cure of old chilblains. Among these are joiner's glue, honey, and the so-called animal baths[1] (animalische Bäder), including baths made with guano. That these applications have any therapeutic value, I neither assert nor deny.

Real benefit, however, is derived from the employment of *pressure* in the case of chilblains seated on the fingers or toes, or on any other part which admits of its application. The common adhesive plaster may be used for this purpose; but the simplest plan is to employ narrow tape, wound tightly round the finger or toe, from the extremity upwards, after the manner of the *Theden'sche Verband*, applied in fractures of the phalanges.

Excoriated, suppurating, or ulcerated chilblains are, of course, to be treated in the same way as similar affections arising from any other cause; but even in these cases water should, as far as possible, be made use of as a local application, either cold wet rags or warm fomentations being employed. But as this can be done only when the patient gives himself up entirely to the treatment and remains in bed, we are often obliged to direct that some plaster [illegible] should be applied. For this purpose I can especially recommend the[1] Emp. Lithargyri Fuscum, or Emp. domesticum.

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[1] [illegible] has informed me by letter that when a patient is affected with [illegible] of a limb, the part is often introduced into the second [illegible] from a recently slaughtered ox or other ruminant, under the [illegible] heat will soften the inflammatory material.—[ED.]

In frost-bites of the second degree, when bullæ are present, the treatment which I have found most successful is the so-called *ectrotic* method, which consists in puncturing the roof of the bleb with a pointed stick of nitrate of silver, and rubbing the caustic firmly over its base. As soon as the eschar thus produced can be removed, I again apply the nitrate; and I continue to use it in the same way until the surface of the wound appears clean and covered with granulations. This practice has sometimes prevented the ulceration which follows the rupture of the bullæ from extending deeply and destroying the tissues beneath.

When the action of cold has led to the formation of eschars, the first thing is to effect the removal of the parts which have undergone mortification; and when this would be but slowly and imperfectly accomplished by the natural processes, we must have recourse to the ordinary operative measures.

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[1] *Emp. Fuscum* (Brown Diachylon). (Minium 8 oz., olive oil 16 oz., yellow wax 4 oz., camphor 2 dr.)—The colour is given to this preparation by boiling the minium and the oil together, till a brownish-black mass is formed. Jourdan, 'Pharm. Univ.'—[Ed.]

HAPTER XIV.

HE DERMATITIDES PROPER.

UTE, NON-CONTAGIOUS, EXUDATIVE DERMATOSES.

B. Dermatitis symptomatica.

I. *Dermatitis erythematosa.*

symptomatic inflammation of the skin.)

Erysipelas.

atica, Rosa, Rothlauf, Hautrose, Erysipèle, Risipola.

cutaneous affection in which the skin is swollen ense, diffused, red colour, disappearing beneath inger; in which vesicles, bullæ, or pustules, which is attended with febrile symptoms, and usion or of burning pain; and which, when it ed either by desquamation only or by the forma-

een compared to the exanthemata by recent as writers; and even if it has not been attri- contagious principle, it has at least been peculiar crasis. For my part, I cannot s view. I regard erysipelas as a com- capable of being excited by various seat in the integument itself, while ther organs, or have an origin as as little disposed to admit the crasis of the blood as to account for the occurrence of epidemics of this disease by referring them to a special contagious principle.

SYMPTOMS.

Several writers have thought fit to admit in erysipelas (as in the exanthemata) distinct periods or stages, namely, a *stadium prodromorum*, a *st. eruptionis*, a *st. floritionis*, and a *st. desquamationis*. Now, it is, of course, undeniable that erysipelas breaks out, reaches its acme, and afterwards declines; and consequently its whole course may be arbitrarily divided into such stages. But these do not, in the case of this disease, rest on the same firm basis as in the exanthemata. They are not definite enough in themselves, nor are they sufficiently characterised by special symptoms. Moreover, the different phenomena do not, in erysipelas, follow one another in regular order, nor are the divisions which have been fixed upon uniform and of determinate length, as they are in the exanthematic fevers. For these reasons it appears to me that I may with advantage abstain from dividing the course of this complaint into distinct periods.

However, I think it well to arrange the symptoms of erysipelas in *three groups*, exactly as I did those of morbilli, scarlatina, and variola; the first of these groups including the appearances presented by the skin; the second, the febrile phenomena; and the third, the symptoms due to affections of the different organs of the body, the skin excepted.

1. *Cutaneous appearances.*—Erysipelas generally begins at some particular spot, the skin over a circumscribed space of perhaps the size of a walnut becoming slightly swollen, and of a shining red colour. On the application of pressure the redness disappears, and when the finger is removed, the part is at first seen to be of a yellow hue, but quickly again becomes red. The patient, at this time, complains of slight pain or itching.

In the course of the first twenty-four hours the disease spreads to a greater or less extent from the spot originally attacked to the adjacent parts of the cutaneous surface, which are now affected in a similar way; in other words, erysipelas diffuses itself *per contiguum*. Thus, at the end of this time it covers a tract as large as the palm of the hand, and after another period of the same length it will have extended over a space of double that size. After the lapse of seventy-two hours the complaint has generally reached a limit, within which it is confined during the whole of its further course; at any rate, after this time it usually remains stationary for several days. The redness is now very deep, with a tinge of blue or yellow, particularly at the border of the part affected; the amount of swelling, and, consequently, the degree of tension, vary in different cases, but are sometimes very considerable; the surface is smooth and shining, as if oiled (*Erysipelas glabrum*).

Presenting these appearances, erysipelas reaches its acme when it ceases to spread; it then receives the name of *Erysipelas fixum.*

After this time the tension gradually diminishes, the surface of the skin has no longer a shiny appearance, the epidermis becomes again furrowed, and the intense red colour of the part affected passes into a darker hue. Still later the cuticle begins to peel off, forming lamellæ or shreds of greater or less size, and this desquamation is the last local symptom of the disease in cases which run the ordinary favorable course.

2. *Febrile symptoms.*—The appearances of dermatitis above described are generally preceded by symptoms of fever, or, in other words, by shivering, followed by subjective sensations of heat and elevation of the temperature of the skin, acceleration of the pulse and respiration, great depression and lassitude, pains in the joints, urgent thirst, and high-coloured urine. These symptoms continue, with more or less intensity, until the tension and swelling of the skin begin to decrease; afterwards, as a rule, subsiding in proportion as these diminish, and as the cuticle begins to peel off. By the time that the desquamation is fairly in progress all the febrile symptoms have generally disappeared.

3. *Concomitant symptoms.*—In many cases of erysipelas these are altogether wanting, the tongue being clean, and there being a complete absence of nausea, vomiting, diarrhœa, and every other sign of disorder of the digestive tract. But in other instances, and sometimes even in mild forms of the disease, symptoms of a trifling gastro-intestinal catarrh (Gastricismus) are present, or signs of slight cerebral irritation or pressure, or, lastly, such as point to some affection of the circulatory or respiratory organs.

VARIETIES OF ERYSIPELAS.

1. *In regard to its form.*

The exudation which causes the swelling in this disease is not always diffused uniformly throughout the tissues of the integument. For in some cases a serous fluid is poured out beneath the epidermis at certain points, and forms vesicles or bullæ of more or less size, the ordinary form of the complaint being thereby converted into an *Erysipelas vesiculosum* or *E. bullosum*. The fluid contained in such vesicles or bullæ is largely albuminous, and has always a neutral or feebly alkaline reaction. When examined microscopically, it is found, from the very first, to contain a few pus-cells.

These vesicles or bullæ are liable to various changes. Sometimes they burst, whereupon their contents escape, their roof of epidermis sinks in, and brownish scabs are formed. In some cases, however, the whole of the fluid contained in these vesicles or pustules dries up, with the epidermis which covers them, into crusts more or less thick, which are cast off when the rest of the cuticle undergoes desquamation. In other instances, again, the serous fluid, at first transparent or yellowish, becomes turbid, like whey, and afterwards straw coloured. It is, in fact, converted into pus, as is evident not only from its appearance, but also from its consistence and its more decidedly alkaline reaction, as well as from its microscopical characters. This form of the disease is the *Erysipelas pustulosum;* and, when the contents of the pustules have dried up so as to form thick crusts, it constitutes the *Erysipelas crustosum* of the older writers.[1]

The *E. vesiculosum, E. bullosum,* and *E. pustulosum,* frequently occur in combination, or are developed the one from the other in the same patient. Thus, the affection may begin as an *E. glabrum,* and become successively vesicular, bullous, and pustular, without and generally undergo exacerbation each time that the complaint spreads to fresh regions. Moreover, the whole character of the disease and the course which it takes are far more unfavorable than in the ordinary form of erysipelas; indeed, this migratory variety terminates for the most part fatally.[1]

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[1] I cannot but avail myself of this opportunity of drawing attention to the fact that our forefathers incorrectly applied the same names (*Erysipelas pustulosum, E. crustosum*) also to cases of acute eczema. Again, the term *Erysipelas anomalum* (wilder Rothlauf) was used by these writers for the *Eczema impetiginosum,* particularly when it affected the face and took a more chronic course.

According to the definition of erysipelas which I have given, it is, of course, obvious that such affections do not belong to this disease.

3. *In regard to its seat.*

Any part of the cutaneous surface may be attacked by erysipelas; indeed, we find in books descriptions of cases in which the whole body is said to have been affected by this disease. It was to this rare affection, the *Erysipelas universale,* that the names *Hieropyr, Ignis sacer, Ignis Sancti Ignatii,* were especially applied. But, as a rule, erysipelas is confined to some particular region of the body.

1. *Erysipelas faciei.*—Of the local forms of this complaint, that affecting the face is certainly the first in order of frequency. It generally begins on the nose or forehead, and afterwards spreads in all directions. For the most part, however, it does not extend be-

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[1] In giving an account of the migratory variety of erysipelas I cannot avoid referring to the form of inflammation of the skin generally known under the name of ***absorbent inflammation*** (Lymphangioitis). In fact, the only difference between this affection and that which I have been describing is that absorbent inflammation is less intense, and is confined to those parts of the skin beneath which lie the larger subcutaneous vessels, and, consequently, the lymphatics also. As is well known, this disease may arise from some slight wound, or from an ulcer or abscess, or even a mere pustule or excoriation, seated on one of the upper or lower limbs. It consists in the formation of striæ, the breadth of a finger, and having a rose-red colour, and of small raised swellings (kleiner wulstiger Elevationen). These appearances follow the course of the vessels and nerves, always advancing towards the trunk from the distal parts of the limb. The red colour of the lines is sometimes interrupted at certain points, reappearing, however, higher up, in the form of maculæ. These striæ extend upwards as far as the nearest absorbent gland, which likewise becomes swollen and tender. Indeed, pain is also produced by pressure over the red lines themselves, at any part of their course. The presence of absorbent inflammation on any one of the limbs generally prevents the part from being used by the patient, for every movement of it gives rise to very severe pricking pain. Like the erratic erysipelas, this affection, when it subsides, leaves either deposits of pigment, of abscesses of greater or less size, or indurated cord-like elevations.

yond the face, so that it may be named an ***Erysipelas fixum faciei.*** When this is the case the affection is limited above by the scalp; in the opposite direction it extends downwards towards the laryngeal region; while its lateral boundaries are formed by the ears, which are reddened and swollen, and project outwards from the side of the head. The eyelids are very œdematous and swollen, and cannot be opened, and the conjunctiva is often involved. The skin of the nose is tense and shining; the lips are so much swollen that they cannot be closed, and, consequently, the tongue becomes dry, and there is a continuous flow of saliva and buccal mucus from the mouth.

When erysipelas of the face, from being fixed, becomes migratory, its extension generally escapes notice for a time, because it occurs in the direction of the scalp, where its discovery is interfered with by the presence of the hair. But, as I have already stated, the patient, under these circumstances, complains of severe pains in the head, increased by pressure, and even by the contact of a pillow; and this should draw our attention to the fact that the disease is spreading. It is only when the affection has passed over the top of the head and reached the back of the neck, that the sharply defined reddening of the skin is again to be seen.

Erysipelas of the face, whether fixed or migratory, is not, however, necessarily so extensive as I have described it. On the contrary, it is often confined to the cheeks, or even one cheek, or to the neighbourhood of the forehead, the ear, or the lower jaw. In some cases no local disease can be detected as the cause of these circumscribed forms of the affection. But, for the most part, they evidently arise from some local complaint, such as eczema or lupus of the nose or lips, periostitis, deeply seated abscesses, or caries or necrosis of the bones. There is also one variety (the *Erysipelas odontalgicum*) which is set up by caries of the fangs of the teeth, while another (the *Erysipelas otalgicum*) is caused by disease of the external auditory meatus, or the neighbouring parts.

2. *Erysipelas mammarum.*—This is an erysipelatiform dermatitis, which is generally secondary to abscess of some subcutaneous structure, especially the mammary gland. Like the affection last described, it also may be either fixed or migratory.

3. *Erysipelas umbilici.*—This is a not uncommon disease of newly

born children, arising from, and being kept up by, suppurative action occurring at this spot. It, too, may be stationary, or may spread to adjacent parts.

(4) *Erysipelas genitalium.*—This disease may be met with in either sex, and presents the ordinary symptoms, but requires to be specially distinguished from the acute forms of eczema, which occupy the same parts. It most commonly appears as a metastatic affection in the course of one of the exanthemata.

(5) *Erysipelas extremitatum.*—This also is sometimes due to the formation of metastatic deposits in cases of general pyæmia, and is sometimes secondary to ulcers, or abscesses seated in the subcutaneous areolar tissue, or to wounds or other injuries. Its symptoms differ in no respect from those which have been described as belonging to erysipelas in general; and it may either remain confined to the spot originally attacked by it, or become migratory and spread to the neighbouring parts of the cutaneous surface.

Diagnosis.

It is not possible to draw strictly a line of distinction between erysipelas and the affections which some have described under the names of erythema, inflammatory œdema, and idiopathic dermatitis (using this last term in a sense different from that in which I have employed it). For, in practice, we see many cases in which these conditions pass one into another, or are present simultaneously. Yet we can, in general, state what symptoms are most characteristic of erysipelas; and, in most instances, we can distinguish these from those of the other diseases I have named. The most striking character of erysipelas is, undoubtedly, besides the reddening and heat of the part affected, the existence of considerable *swelling;* for in the mere erythemata no great amount of swelling is ever observed, whereas both the other symptoms to which I have referred are present. Again, the course and duration of these diseases are very different. The erythemata last but a short time, and, when they subside, leave behind no morbid changes in the skin, being followed neither by desquamation nor by pigment-deposit. On the other hand, a much longer period is required for the development and involution of erysipelas; and this disease is, in every case, followed by desquamation of the cuticle, and by a change in the colour of the skin, which becomes yellowish or brownish. Moreover, crusts are very frequently formed by the drying-up of the fluid poured out; and, indeed, other changes in the integument besides these are sometimes observed. Lastly, in the erythemata either no concomitant symptoms of importance are present, or their existence enables us to determine that the patient is affected in addition with some other substantive disease; whereas severe shivering is never absent in cases of erysipelas, advancing and receding *pari passu* with the cutaneous affection. By the presence of the symptoms last mentioned we can also, in every case, distinguish erysipelas from the local disease which, as I have stated, some have named an *idiopathic dermatitis*.

In acute œdema, on the other hand, although no considerable amount of heat or redness is present, the skin is tense and swollen in so marked a degree, and its surface is so smooth and shiny, that this affection may be distinguished without difficulty from every form of erysipelas. When pressure is applied with the finger to a spot which is œdematous, a little depression is produced and the part assumes a paler colour; and these effects afterwards slowly disappear. But on the application of pressure in the same way to a region affected with erysipelas the swelling is in no degree lessened, and the redness vanishes for an instant only, enabling us to see that the skin has a yellow tinge. Œdema is, indeed, followed by desquamation, which continues for some time after this affection has subsided; but even then the colour of the skin is not altered, as it is in erysipelas: nor are any pustules or abscesses ever formed as a result of the one complaint, although these appearances are commonly met with in the other.

Pathological Anatomy.

The morbid changes in the skin which present themselves in erysipelas are essentially the same as in every other form of dermatitis, and consist in a stasis of the blood and in the formation of inflammatory exudation. This exudation is poured out both into the substance of the cutis, and between it and the epidermis; and thus we find a sufficient explanation, not only of the swollen condition of the integument, but also of the occurrence of vesicles, bullæ, and pustules. Moreover, the tissue of the true skin is often reduced into the smallest possible bulk (wird auf ein Minimum reducirt) by the amount of exudation which is formed, and the hair-sacs are compressed to such an extent that the hairs fall out when the inflammation has subsided.

According to the investigations of Andral and Gavarret, the blood of patients suffering from erysipelas contains an excess of fibrin, but less than the normal proportion of blood-corpuscles and of fixed salts. But the results which they obtained were not sufficiently constant to be of any great scientific value. Analyses of the blood under any circumstances require to be performed with great care; and more than usual accuracy is needed in such a disease as erysipelas, which may arise from such varied causes, both internal and external to the body.

It is only in those cases in which the eruption did not disappear before death that the stasis of the blood can be demonstrated in examining the bodies of those who have died of this disease. The cause of death is found to be either an anæmia, resulting from the extent to which the inflammation of the skin had spread, or some pathological change due to the morbid condition of the blood (Blutkrase), to which the disease itself owes its origin. It will also be readily understood that exhaustion of the nervous system may give rise to the fatal termination, particularly when the affection is very extensive. The immediate cause of death is either a congestion and acute œdema of the brain, or a meningitis, or an hypostatic engorgement of the lungs with pulmonary œdema, or, again, an œdema of the glottis due to the inflammation having extended to the mucous membrane. Moreover, pneumonia, pleuritis, pericarditis, or even peritonitis or enteritis, is sometimes found on post-mortem examination in these cases. The blood is fluid and of a bright red colour when death occurs while the disease is at its height; but if exudation has been poured out in large quantity before the fatal termination, the blood is found to be in an inspissated condition (im Eindickungszustande).

Etiology.

The causes of erysipelas may, in general, be divided into the *external* or *local*, and the *internal*. Their action may be intensified by a *predisposition* (Disposition) to the disease, dependent on the existence of conditions favorable to its development. These predisposing causes, also, may either be external to the patient, or have their seat within his body.

(1) Among the local causes we have to enumerate certain pre-existing diseases, in which the inflammatory action is liable to extend to the skin, and so an erysipelas is produced. Under this head fall—

(*a*) Various *inflammatory affections of deeply seated parts*, which are connected with the skin either by continuity of tissue or by vascular communication. Among these affections may be mentioned periostitis, caries, phlebitis, arteritis (for instance, the arteritis umbilicalis of infants), lymphangiotis, and adenitis.

(*b*) Certain diseases in which the cutaneous tissues are exposed to the *local action of pus*. The affection due to this action has generally been included under the name of *purulent absorption* (Eiterresorption). In reality, however, it resembles the red ring (*areola*, Entzündungshof), which arises when the contents of a vesicle become converted into pus, and which is due to the action of the puriform fluid. The areola of such a pustule is, in fact, quite analogous to the more or less extensive erythematous blush which makes its appearance round any part which is the seat of suppuration or ulceration. For instance, we often see erysipelas produced by an inflammation of the nasal mucous membrane; and we have the so-called *erysipelas otalgicum*, secondary to ulcerative inflammation of the external auditory meatus, and the *erysipelas genitalium*, which appears in women as a result of diphtheritic or aphthous affections of the vulva. So also an erysipelatous inflammation of the skin developes itself round ulcers or wounds when the pus which they secrete is not allowed free exit; and the same thing is observed at the periphery of any pustular eruption (such as eczema or lupus) when the pus happens to accumulate beneath the crusts. In all these cases the dermatitis is set up by the local action of pus on the parts with which it comes in contact.

(2) The internal causes of erysipelas are far from being as well known to us as the local causes, of which I have been speaking. They include, however, certain changes in the blood itself, which are partially described as being *phlogistic*, *septic*, or *pyæmic*. Indeed, a condition of *pyæmia*—due to an infection of the circulating fluid by the absorption of pus or some organic matter, or even of tissue-elements

in a state of putrefactive fermentation—is probably the fundamental cause of erysipelas in most instances, if not in every case. In support of this opinion, I may refer to direct experiments, in which pus and various putrid matters have been inoculated from without (as, for instance, in cases of vaccination with unhealthy lymph), and to the results of the absorption of certain animal poisons, such as the contagious principles of glanders and of the "Milzbrand," the poison of serpents, the post-mortem room virus, &c.

Among the *predisposing* causes of this complaint are enumerated arthritis, chlorosis, scrofulosis, and certain diseases; and, lastly, the having been before affected with erysipelas.

Dr. Carl Haller, Primararzt in the General Hospital at Vienna, has shown by statistics,[1] based on observations carried on for ten years in that institution, that this disease is of more frequent occurrence during the months of April, May, October, and November, than at other times of the year.

It is, moreover, incontestable that at certain periods the following diseases are all unusually common: viz., erysipelas, erythema, herpes zoster, herpes Iris, furunculi, inflammations of the cellular tissue, and whitlows (Panaritien). At these times, also, wounds are apt to take on an unhealthy action, and are often attended with gangrene or *diphtheritis cutanea*. Those who are fond of such expressions may, if they choose, account for these facts by ascribing them to a *genius epidemicus*, or to a *constitutio erysipelatosa*.

The view held by the older physicians, and even by some of those of the present day, that *sordes gastricæ*, catarrhal diseases of the intestinal canal, and hepatic affections are among the causes of erysipelas, evidently arose from a mistake. As I have already mentioned, a yellow colour is often seen at the edge of the red patches, and also on the patches themselves, when the redness has been removed by the application of pressure. But this yellow colour is due, not to the presence of biliary pigment in the blood, but to the same cause as the redness, namely, to the colouring matter of the blood itself. So, also, a furred state of the tongue, a loss of the natural relish for food, vomiting, diarrhœa, &c., are not symptoms special to diseases of the digestive tract and the liver, but, as is well known, may be due to general morbid conditions, affecting perhaps the blood alone, or even to cerebral or phor, collodion, and oil. Some have ascribed specific effects to inunctions with lard, or to the use of nitrate of silver painted over the part; and vesicants, and even the actual cautery, have found their advocates. Then, the so-called *specific* system, introduced by Hahnemann, came into vogue; and, without knowing it, those who practised this method really employed a very simple, and (one may even say) an expectant treatment, of which the results were not less favorable, if indeed they were not more favorable, than those previously obtained.

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[1] 'Die Volkskrankheiten in ihrer Abhängigkeit von den Witterungsverhältnissen,' &c., Wien, 1860.

Priessnitz, again, and his followers advised the application of cold water both in erysipelas and in every other disease, and have carried out this treatment with success.

All of these methods have, in fact, been attended with results which are very much the same. Whichever of them may have been employed, the majority of the patients have recovered, but some few have died; and in each case the per-centage of deaths has been the same. Since, then, experience does not pronounce in favour of one rather than another of the various modes of treatment which have been extolled by different writers, I prefer one which is simply expectant.

So various, in fact, are the symptoms which are observed in cases of erysipelas (and these varieties may probably be traced to differences in the cause of the disease), that there cannot, properly speaking, be any question of a *specific* treatment. Hence, in expressing an opinion that the expectant method is the best, I am far from wishing to exclude the employment of remedies for the relief of particular symptoms. Indeed, a point on which I would particularly insist is that, in managing a case of erysipelas, we must always distinguish between the treatment of the cutaneous affection and that of the various symptoms by which it may be accompanied. This symptomatic treatment must be based on general principles now admitted; and, therefore, no detailed description of it is required. It is only in considering what remedies should be employed to counteract the affection itself that I shall base my opinions directly on the view which I take of the nature of erysipelas, as being essentially an inflammation of the skin.

When any other part of the body is inflamed, the procedure which we adopt consists of what is termed the antiphlogistic method (der antiphlogistische Apparat); and when *the skin* is the seat of inflammation, this mode of treatment is peculiarly applicable, because we are in this instance able to make our remedies act directly on the region affected. Now, in speaking of *antiphlogistic* agents I do not mean venesection, leeches, cupping, scarifications, and the like. All these I regard as being in this disease superfluous, if not injurious; and *cold* is the only antiphlogistic agent to which I have recourse. Thus I cover the reddened, hot, and swollen patches of skin with rags dipped in cold water and afterwards well wrung out; and upon these, if necessary, I place a caoutchouc bag, or a bladder, half filled with small pieces of ice. These applications are continued day and night, uninterruptedly, until the tension, pain, and heat of the inflamed parts have subsided, which generally occurs within a period of from two to four days.

I do not find that when cold (Eisumschläge) is employed in this way, there is any liability for the erysipelas to disappear of a sudden, or to undergo metastasis to any internal organ. The patients themselves speak of this mode of treatment as being very agreeable, and as removing the annoying sensations of tension and heat in the part affected. In fact, they state that the complaint is relieved, in a marked degree, by the use of cold applications.

Besides employing cold in the above-described manner, I have frequently used with advantage the blue mercurial ointment, especially in the migratory form of erysipelas. I have then had the ointment spread on a piece of linen, and have laid this upon the inflamed spot, so as to be accurately in contact with every part of it. Outside the linen I have placed (as usual) compresses first dipped in water, and upon these, again, a bladder containing ice. Should the spreading of the disease continue in spite of this treatment, I cover not only the parts recently attacked, but also the healthy skin beyond, over a space of two fingers' breadth, with linen smeared with mercurial ointment, and outside this apply cold as before.

At the same time, I never omit to examine carefully the parts in the immediate neighbourhood of the surface affected with erysipelas, in order to detect, if possible, its cause. It frequently happens that this may be recognised in some small pustule placed close by, or, perhaps, in an eczema (especially an eczema of the nasal fossæ), or in a deeply seated abscess, or a swollen gland, or some previous cutaneous affection. When this is the case, a suitable treatment must, of course, be at once applied to the disease which thus formed the starting-point of the erysipelas. Above all, the accumulation of pus at this spot must be prevented by the use of emollient cataplasms, by rubbing the part with oil, and by the removal of any crusts which may be formed; and, in some cases, it is advisable to destroy the purulent focus (den Eiterherd) by the direct application of nitrate of silver.

When the cold has been employed for some considerable time, it often happens that the part becomes numb and devoid of feeling; in other words, anæsthesia is produced. Under these circumstances, the patient is naturally unwilling to continue the cold applications; and they should, therefore, be left off for a time, until the return of heat and pain in the part makes them again acceptable to him.

The plan of treatment above described is one which I can conscientiously recommend for adoption, in most instances. I can declare that it is always perfectly *harmless*, and that it is in the majority of cases very valuable, from its soothing the patient and relieving the pain which he suffers. But I must, at the same time, acknowledge that, in some mild forms of erysipelas, there is no necessity for the application even of rags dipped in cold water, still less of blue ointment, or bladders containing ice. In these cases, a purely expectant method, without the employment of any local remedy, will effect all that is desired.

As I have already stated, the internal treatment, in cases of erysipelas, should be purely symptomatic. Very often, all that is necessary is to act upon the imagination of the patient and his friends. The result will be much the same, whether, on the one hand, we give the Decoct. Altheæ with Liq. Amm. Acet. (as some recommend), or cooling drinks, containing the *Acidum Halleri*,[1] or dilute phosphoric acid, or lemon juice, or the *Potio Riveri* ;[2] or whether, on the other hand, we simply allow our patient to drink cold water. We should always avoid prescribing energetic remedies, such as emetics or purgatives, which, indeed, are admissible only when there is decided constipation, or when the stomach is overloaded.

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[1] This is the *Acidum Sulphuricum Alcoholisatum*, or the "*Eau de Rabel.*" It is made by mixing equal parts of strong sulphuric acid (66 degrees) and of rectified spirit (36 degrees). The alcohol is added gradually to the acid; the mixture is left for a week, and is then poured off into a stoppered vessel. Jourdan, 'Pharm. Univ.'—[Ed.]

[2] This is an effervescing mixture, made, for the most part, with carbonate of potass and citric acid.—[Ed.]

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2. *Dermatitis phlegmonosa.*

(Deeply seated, phlegmonous parenchymatous inflammation of the skin.)

By the term *phlegmonous inflammation of the skin*, I understand, with Rokitansky, an inflammation affecting the whole thickness of the integument, from the papillæ down to the deepest strata of the corium, and often involving even the subcutaneous fatty and areolar tissues. This form of disease is distinguished by the following characters:—The redness is less bright than in erysipelas, but cannot be entirely obliterated by the pressure of the finger. The skin, after the disappearance of the redness, displays a deep yellow colour. The swelling in this affection is remarkable not so much for its extent as for the great degree of firmness and induration presented by the cutaneous tissues. The *Dermatitis phlegmonosa* generally runs an acute course. It does not often subside and terminate by the absorption of the effused matters: on the contrary, it results for the most part in the formation of abscesses, or the destruction of the part by sloughing. It may, however, present itself in a chronic form, and may develope itself from an acute phlegmon (aus der acuten Phlegmone), or be secondary to various cutaneous affections, among which are eczema and prurigo. Moreover, it may appear as a result of disease of the cutaneous veins, being then the starting-point of the so-called *varicose ulcers*.

Phlegmonous inflammation in the *acute* form sometimes affects small portions of the skin only, in which case the morbid appearances produced by it are termed *furunculi*. In other instances, it attacks large tracts of the skin, constituting the disease known by surgeons under the name of pseudo-erysipelas (Rose mit Gangrän, *Wattmann*—Necrose des Bindegewebes).

The symptoms of both the circumscribed and the diffuse varieties of the acute phlegmonous dermatitis may be included under the following description:—The first symptoms of the disease are generally subjective sensations, the patient complaining of pain in some region of the body, increased by the application of pressure. At this time no change is to be seen in the colour of the spot affected, but some part of the skin, of greater or less extent, is felt to be indurated, the hardness being sometimes circumscribed, sometimes diffused. A day later, a bright-red blush begins to be perceptible, appearing, for the most part, first on the summit of the elevation felt by the touch. This blush at once spreads not only over the part which is indurated, but also beyond it; and the swelling, redness, and pain now increase from hour to hour. The subsequent course of the disease, however, is not in all cases the same. Sometimes, after the lapse of a shorter or longer time, according to the extent and severity of the affection, the redness and the induration subside; the pain then diminishes, and, at length, all that there is to show that a dermatitis has existed is that the epidermis peels off in greater quantity. In other cases, and far more frequently, fluctuation is after a time perceptible at the seat of the disease, and becomes more and more distinct, until, at length, the pus which has accumulated is enabled to escape, by the skin over it becoming softened, or sloughing. The contents of the abscess having in this way been discharged, its interior is exposed to view, and we then see a white, or whitish-yellow, firmly adherent mass, formed of dead connective tissue. This slough is of greater or less size, according to the extent of the original inflammation. It sometimes forms a continuous mass, and may then be of large size; while, in other instances, there are several distinct sloughs. These white or whitish-yellow masses of areolar tissue afterwards become detached from their bed, and are extruded. As soon as this has occurred, the amount of pus formed begins gradually to diminish, the walls of the abscess fall in, its base becomes covered with healthy granulations, and the part heals. A cicatrix of greater or less size is always left in these cases.

The pathological process I have been describing, when confined to a small spot, produces the affection which is termed by Fuchs the *Phyma* (Entzündungsgeschwulst of certain writers), but which is known to most medical men under the name of the *Furunculus* (Furunkel, boil). This last term is the one to which I give the preference, and I do not admit the existence of any distinction between the Entzündungsgeschwulst (inflammatory tumour) and the furunculus. I shall give in detail my reasons for holding this opinion, when I come to discuss the etiology of the phlegmonous inflammations of the skin.

The distinctions between the various forms of furunculi to which Alibert and others have drawn attention are also of very little importance. As I have already stated, the phlegmonous inflammation of the skin is sometimes confined to a small spot not bigger than a lentil or bean, while in other instances the part affected is as large as a man's fist; but there is no essential difference in the nature or course of the disease in the two cases. There is, therefore, no real necessity for distinguishing between a "follicular furunculus" (Follicular-Furunkel) and a "furunculus of the areolar tissue" (Zellgewebs-Furunkel), merely on account of their difference in size. Again, different epithets have been given to furunculi, according to the way in which the pus is discharged. If the roof of the abscess is penetrated by its purulent contents at a single point, the affection is termed a *F. simplex*; if at several spots, it receives the name of *F. vespajus*; while, if the pus is allowed to escape only through a small fissure, it is called a *F. panulatus*. But these differences are by no means so important as to render it necessary that divisions of the furunculus should be founded upon them.

The following, then, is an adequate definition of this affection:—A furunculus is a circumscribed phlegmonous inflammation of the skin, terminating in suppuration and in the formation of an abscess, but not in gangrene of the roof of this abscess.

When gangrene of the inflamed part of the skin occurs, we have to deal, not with a *furunculus*, but with an *anthrax*. Thus the anthrax or carbuncle is a swelling of a furuncular character, but presenting the essential peculiarity that its roof undergoes mortification. The appearances in this affection are not always the same. Sometimes the surface assumes a bluish-black colour, and a bleb is formed by the elevation of the epidermis; or the integument is penetrated at several distinct points by the sloughing connective tissue, so that, when this has been extruded, the part affected presents a sieve-like appearance. But, in other instances, the whole skin, including both the derma and the cuticle, softens down into a discoloured pulp; or, lastly, the integument and the gangrenous connective tissue beneath dry up together into an eschar of a brown or even a black colour, and as hard as leather.

The further changes in an anthrax consist in the detachment of the different sloughs of connective tissue, exactly as has been described in the case of the furunculus. The cavity which is thus produced is more or less extensive according to the size of the sloughs; it becomes filled up by granulations, and heals, leaving for the most part a very distinct cicatrix.

Such are the local changes which occur on the cutaneous surface in these affections. But, besides these, general symptoms are in most instances present. These are most marked in cases of carbuncle, but they may be observed even in furunculosis, especially when several boils appear simultaneously. Thus, severe febrile disturbance, with shivering, often precedes an attack of one of these forms of phlegmonous dermatitis, or sets in during its course; and among the other concomitant symptoms may be mentioned headache, loss of appetite, a furred tongue, dryness of the mouth, and nausea. When the progress of the case is favorable, these symptoms subside as soon as the gangrene has reached its limits, and from this time the local changes form the only indications of the disease. It is, however, to be stated that these affections sometimes have a fatal issue. This occurs, for instance, when the gangrenous action does not become limited, but goes on spreading from point to point. Moreover, even when the extension of the sloughing has ceased, the death of the patient may be caused by exhausting suppuration, or may result from purulent absorption and pyæmia, or be due to the aggravation of the general morbid condition or dyscrasia, which itself gave rise to the formation of the anthrax or furunculi. In these cases pustules and furuncles of various sizes are often at first the only symptoms, and for a considerable time nothing occurs beyond the repeated formation of boils. But sometimes, even from the commencement of the patient's illness, small anthraces appear, which take the ordinary course till at last a large carbuncle arises at some part of the body and puts an end to his existence.

These forms of phlegmonous inflammation of the skin, described as furunculi and anthraces, may be either sporadic or endemic, or even, according to Fuchs and other writers, epidemic.

Furunculi sometimes occur, *sporadically*, in persons who are in other respects healthy, concomitant symptoms being then altogether absent. In other cases they are secondary to some one of the *chronic dermatoses* attended with itching (such as eczema, scabies, or prurigo), or arise from the irritation produced by *pediculi vestimentorum*. Again, they often occur singly, the one which first appears being followed by no others; but sometimes several of them make their appearance together, and fresh ones keep breaking out for a very considerable time.

Thus, then, both the furunculi and the anthraces are naturally divided into two groups—the *idiopathic* and the *symptomatic*.

The *idiopathic* phlegmonous inflammation of the skin (phyma) may be set up by mechanical injury, or by irritation of any kind, affecting the skin. I would here specially refer to the furunculi caused by the repeated application to the cutaneous surface of cold water, which, as employed by the hydropaths, is an irritant to the skin. As I have already stated, similar affections appear in the train of certain cutaneous diseases attended with itching. In fact, boils very frequently accompany those morbid changes in the skin which are caused solely and entirely by the patient repeatedly scratching himself, and are not at all due to any dyscrasia. Thus we often see furunculi in persons who are merely affected with body-lice, and who are constantly compelled to scratch themselves by the irritation set up by these animals, and by the sensations of itching which are thus produced. The same thing is observed in scabies, which no one, surely, at the present day, will suppose to be caused by a dyscrasia. Under these circumstances, we may venture to infer that furunculi arise from the direct action of local irritants upon the skin, and not from any general internal cause to be looked for in an altered state of the blood. Hence that view is clearly inadmissible which ascribes to these furuncular affections a critical character, and they may, with perfect correctness, be regarded as idiopathic.

Every one, however, knows that boils are also apt to arise in greater or less numbers without the skin having been in any way irritated, and that the complaint may then become chronic from the repeated formation of fresh boils. Such *symptomatic* furunculi are generally attended with symptoms of a different kind, and particularly with yellowness of the skin, anorexia, depression, lassitude, malaise, and sometimes even with fever and loss of flesh. Hence these affections have rather to be regarded as being expressions of a constitutional disorder, to which the name of *furunculosis* may be given with advantage, for the use of this term serves to distinguish the cases in which repeated outbreaks of furunculi occur from those in which their appearance is merely accidental.

With these constitutional forms of furunculosis may be associated certain diseases which are caused by animal contagia, giving rise to phlegmonous inflammation of the skin. These diseases are—

I. *Glanders.* II. The *pustular affection* produced by the *cadaveric poison.* III. The *pustula maligna.*

I. The disease known as *glanders* (Rotzkrankheit, Maliasmus of *Fuchs,* Morve et farcin of Rayer) presents the following characters:— The first symptoms of it are pains in the joints and shivering, which are followed either by an eruption of pustules alone, or, in addition, by the formation of certain hard lumps resembling furunculi, isolated from one another and of a red colour. Moreover—sometimes in association with these cutaneous affections, sometimes apart from them—patches of the skin are found to be of a variegated blue and yellow hue, and to have become indurated and the seat of extensive hæmorrhage; and large deposits of inflammatory exudation in the tissues of the integument are formed at the same time. These morbid changes are all pretty rapidly developed, and are accompanied by continued febrile disturbance, or even by cerebral symptoms. Pneumonia, likewise, sometimes arises in the course of this disease, which, almost without exception, terminates fatally.

In some instances, glanders, at its commencement, resembles smallpox; and it often happens that a patient suffering from the former complaint is at first supposed to be affected with the latter; the eruptions of the two diseases (in reality very similar) being confounded by medical men who have had but little experience, or have made only a hasty examination of the case. Moreover, pain in the back and cerebral symptoms may belong to either of these complaints. But the careful observer cannot mistake glanders for smallpox, on account of the presence of the more extensive circumscribed patches (the seat of inflammatory exudation due to the phlegmonous dermatitis), and of the widely diffused hæmorrhage into the skin, giving certain parts of the surface a chameleon-like play of colours.

Equally different are the appearances found in the dead body after these diseases. As is well known, the pustules of variola remain after death, appearing flattened, and being imbedded in the substance of the cutis, filled with a whitish-yellow fluid, and evenly distributed over the whole surface of the body; and the skin between these pustules is found to be in a healthy state. Now, in glanders, the hard, yellow or livid patches above described remain unaltered in the dead body, and present the same appearance as during the life of the patient. But generally no pustules are to be seen, those previously observed having by this time subsided, or having been destroyed.

Large livid spots, however, appear soon after death in cases of glanders, and, indeed, after all diseases in which decomposition sets in early. When the patches which are the seat of infiltration are cut into, they are found to be filled with a large quantity of black blood. The mucous membranes of the throat, the nasal passages, and the larynx are also invariably affected in this disease.

It was at one time believed that glanders developes itself in human beings only when they have been *bitten* by glandered horses. But, in the course of the last few years, it has been proved beyond a doubt that it is quite possible for a man to be infected with this complaint by merely living and sleeping in a stable containing horses affected with it, or by having to do with the carcasses of diseased animals. Indeed, it appears that glanders is so communicated in most cases, and that it comparatively seldom arises from a bite.

However, though there can be no question that this disease is caused solely by the transference of the special contagious principle from an animal to man, yet it is not, in all cases, possible to ascertain exactly the way in which infection occurred; and the proof becomes all the more difficult, because (as is well known) glanders cannot be further propagated in the human subject, and never passes from one human being to another.

II. Another disease of a similar kind is one to which certain persons are especially exposed, including anatomists, surgeons, veterinarians, post-mortem room assistants, butchers, flayers, and others. It is caused by the penetration of decomposing animal matters into wounds, or even into the uninjured skin (particularly of the hands), leading to the development of various cutaneous affections similar to those just described. These affections are spoken of by German writers under the name of Leicheninfections-Pusteln.[1]

In some cases this disease consists merely in the formation, on the surface of the hands, of a few pustules (or bullæ filled with pus) of the size of lentils. These pustules are seated exactly round the mouths of hair-sacs, and each of them is therefore perforated by a hair.

They sometimes undergo involution, and lead to no further ill-effects. But, in some instances, redness and swelling quickly spread from these pustules to the adjacent parts of the cutaneous surface, following the course of the vessels: in other words, the characteristic signs of absorbent inflammation may at once be recognised. When this occurs, pustules and abscesses not infrequently form along the track of the inflamed lymphatics; and the glands, in which these terminate, become swollen and painful, and suppurate. Moreover, the neighbouring connective tissue may also be involved in these morbid processes, and a very extensive loss of substance may be produced by its sloughing; so that a condition dangerous to the patient's life may even be set up by the sympathy of the organism in general.

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[1] Dr. Wilks has proposed the name of *Verruca necrogenica* for another cutaneous disease arising from this cause. Perhaps the term "Necrogenic Pustule" might be applied to the affection which is described in the text, and which appears to have received no special name in this country.—[Ed.]

From the nature of these inflammations of the skin set up by animal poisons, it is easy to perceive that besides the symptoms already mentioned many others may present themselves of which no precise account can be given, and which bear only a general resemblance to those described as occurring in furunculosis and in glanders. Thus, we may have to deal with the most simple circumscribed dermatitis, or with a very extensive erysipelatous swelling: small points of suppuration may alone present themselves, or very wide excavations may be formed, and large quantities of unhealthy pus may be discharged; there may be slight exfoliation from the surfaces of the bones, or whole phalanges may undergo necrosis; and between these extreme forms numerous intermediate conditions are met with, which it is impossible and unnecessary to describe in detail: for all that is required is that we should recognise the *cause* of the malady, and keep its *nature* constantly before our eyes.

Experience teaches that for the absorption of the animal poisons which generate these diseases, it is not always necessary that the epidermis should be injured. I have, unfortunately, had abundant opportunity (in both the school of pathological anatomy and the veterinary institution, and also in the case of operating surgeons when practising on the dead body) of satisfying myself that these affections not rarely arise independently of any previous wound, although, no doubt, they are in many instances preceded by some injury. Thus, the absorption of the cadaveric poison has often taken place in persons suffering from eczema or some other skin disease; and it is especially apt to occur when those who make autopsies, or perform operations on the dead subject, are careless, [illegible] body [illegible]

[illegible] and forms a [illegible] as well as the skin [illegible] in which, [illegible]

[illegible] in which [illegible] present themselves, [illegible]

[illegible] des Ordres, [illegible]

[illegible] Schilderungen [illegible] Wiener [illegible]

Treatment.

The *Dermatitis phlegmonosa* presents two distinct indications for treatment. In the first place, we must aim at counteracting the cause of the inflammatory affection of the skin, whether this cause be a constitutional dyscrasia or merely a local disturbance. In the second place, we must endeavour to restore to their normal condition as quickly, and with as little loss of substance as possible, those parts of the integument which are the seat of the morbid changes.

The first indication would be satisfied by the administration of any remedies which should be shown by experience to have the power of preventing the occurrence of these diseases, or even of checking the tendency to relapse. The second object is best attained by the use of certain well-known local applications.

I will begin by speaking of these: and I have, in the first place, to remark that it must always be our primary object to limit the inflammatory process as much as possible, and to reduce the tension and dragging to which the soft parts are subjected; and, therefore, that an antiphlogistic treatment is suited to these cases.

Thus, I apply to furunculi, according to their number and size, and the degree of pain caused by them, either compresses first dipped in cold water, or bladders filled with ice, or even freezing mixtures consisting of two parts of ice and one of salt.[1]

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[1] A freezing mixture, by which a temperature as low as 3° Fahr. is reached, may be made from finely powdered ice and common salt in the proportions stated above, by mixing them together rapidly in a glazed earthen vessel. The mixture should be placed in a muslin bag, kept open by means of a ring, so that the water which forms may at once flow off, and that the cold may be uninterruptedly maintained. It is to be applied to the surface of the part affected for about ten minutes, or at any rate until the skin shall have become white, hard, and nearly painless. Another plan is to touch the part with the bag containing the freezing mixture every second until the desired effect is produced. When this has occurred, compresses, previously dipped in ice-cold water, are to be laid over the boil. This mode of treatment is applicable to all the other forms of phlegmonous inflammation of the skin as well as to furunculi, and both in their early stages and after pus has been formed. Moreover, in the case of very sensitive persons it may be used to produce local

It is true that we cannot always, by the application of cold, prevent pus being formed; but its amount is at any rate reduced to a minimum, the pain is much diminished, and the termination of the complaint is hastened.

This mode of treatment may likewise be used in cases of carbuncle in its early stage, but the cold must in this affection be applied only so long as it is not disagreeable to the patient. Moreover, the gangrenous roof, as well as the areolar tissue beneath (which is traversed by numerous points of suppuration), should be divided by a single incision, or by crucial incisions, or by several cuts in different directions, according to circumstances.

Those who are accustomed to the usual practice of treating boils and carbuncles from the first by means of warm fomentations and poultices, will, perhaps, refuse their assent to my antiphlogistic method until they have tried it either on themselves or on intelligent patients. A particularly favorable opportunity for trying it presents itself in the case of persons who have previously been affected with boils, for which they were treated on the older plan. For the sake of comparison, I have often employed both methods simultaneously for patients suffering from several furunculi, and I have always been told that they preferred the application of cold, and found it more agreeable; and the same conclusion is favoured by the limitation of the inflammatory process, and by the more rapid course of the disease, observed when this treatment is adopted.

On such principles I have for several years endeavoured to control all these diseases, including the more widely diffused phlegmonous inflammations, and even the malignant pustule, the affection produced by the virus of glanders, and that due to the cadaveric poison. But it must be borne in mind that I do not promise that the application of cold will do any good in these cases beyond limiting the inflammatory action in the part affected. I am perfectly well aware that it has no power to remove the cause of the complaint.

For instance, in *furunculosis,* when fresh boils are continually making their appearance, we can alleviate the local symptoms by this mode of treatment; but we are not able, by means of it, to prevent the formation of new furunculi at other points. I must, for my

anæsthesia when an abscess requires to be opened, for it deprives the skin of sensation so completely that no particular pain is caused by the puncture, or even by the unpleasant process of pressing out the sloughs.

own part, confess that, although in many of these cases I have tried all kinds of remedies, I have not as yet succeeded in finding one which has the power of checking the recurrence of the affections of which I am now speaking.

Among the medicines which have been vaunted as possessing this power, are the vegetable and mineral purgatives, the so-called *Hæmato-cathartica* (as, for instance, the decoction of sarsaparilla), and the tonics and *Antidyscrasica* (such as quinine). But, in most cases, we find ourselves disappointed in our expectations from these drugs, and we shall do well, instead of placing much reliance upon them, to subject the patient to a thorough examination for the purpose of ascertaining whether some other morbid condition may not be present, as well as the tendency to the formation of furunculi.

I take this opportunity of again insisting on the fact that furunculosis often occurs in those who suffer from disorders of the digestion, and that it is also common in those who live in badly ventilated rooms. If, then, the patient is affected with eructations, heartburn, and other symptoms of dyspepsia, it must be our first endeavour to remove these symptoms by antacid or bitter remedies, such as the *Trifolium Fibrinum*, the *Tinct. Nucis Vomicæ*, or the sulphate of zinc; after which the formation of furunculi will cease spontaneously. The plan which I have found most successful is to give waters charged with carbonic acid (such as ordinary soda-water), or those which contain small quantities of sulphate of soda, as, for example, the waters of Marienbad, Franzensbad, or Carlsbad. Indeed, it is very advisable to send patients affected with chronic furunculosis to one or other of these spas; for it is important that these persons should be kept in a fresh, healthy air; and at such places they are at the same time withdrawn from their ordinary occupations, and are compelled to change their mode of life.

Medical men are in the habit of recommending baths to be taken in these cases; but I have learnt by experience that neither warm nor cold baths should be employed, except with caution and at considerable intervals. Indeed, every kind of local irritation of the skin should be avoided: an irritant which, in a healthy subject, would excite only a trifling eruption of sudamina, or a slight eczema, may be the cause of boils in a person who is liable to them. Against the use of vapour baths, or strong douche baths, and also against

CHAPTER XV.

THE PHLYCTÆNOSES.

(CLASS IV.—ACUTE, NON-CONTAGIOUS, EXUDATIVE DERMATOSES.)

I. HERPES.

In the attempt to give an historical account of Herpes (in the sense in which Willan used this term, and in which it is at the present day generally employed), we meet with almost insurmountable difficulties. For in ancient times the word ἕρπης was used to designate affections of various kinds, differing altogether from those which are now known under that name. Thus Hippocrates,[1] without admitting the Herpetes as distinct diseases, describes them simply as critical exanthemata, which purify the body, and of which the distinguishing characters are, that they are superficial, and that they spread towards the periphery. Celsus[2] mentions Herpes under the head of θηρίωμα, but gives no definition of it. The following section of his work, that which treats of *Ignis sacer*, is generally supposed to refer to Zoster; but there is scarcely any ground for this idea, except the statement, "fit maxime in pectore, aut lateribus." Scribonius Largus[3] (43 A.D.) repeatedly employs the word Zona to designate the ἕρπης of the Greeks. His contemporary Plinius[4] understands by Zona an acute cutaneous affection, attended with the formation of bullæ, occupying chiefly the loins and the abdomen, but met with also on every other part of the body. He further describes it as confined to one half of the trunk, and as being fatal when it completely surrounds the patient's body.

Galen[5] applies the word Herpes to those cutaneous ulcers of which the destructive action is limited to the surface. He divides the affection into three species (ἕρπης κεγχρίας, ἐσθιόμενος, and φλυκταινώδης). The first of these (the *Herpes miliaris*) is the only one which bears even a distant resemblance to our Herpes, being attended with a pustular eruption. That Galen himself was at a loss in the diagnosis of this affection, is evident from another passage ('Meth. Med.,' lib. iv), where he says, "Herpes non semper ulcus est."

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[1] De Affect. liber, sect. v, Epidem. 3, sect. 3.

[2] Liber v, cap. xxviii, 3.

[3] 'De Comp. Med.,' 62, 63, lib. iii.

[4] 'Hist. Nat.,' lib. xxvi, cap. 11.

[5] Comm. i in Aphor. 55, sect. 6.

These definitions of the Greek and Roman writers prevailed for many centuries; and they were accepted by the Arabian physicians Rhazes and Avicenna, who admitted two species of Herpes, the *H. miliaris* and the *H. corrosiva s. formica.*

Actuarius[1] ascribes both words Herpes and Ignis to a similar origin. He says—"Herpes dicitur eo quod videatur ἕρπειν (quod est serpere per summam cutem), modo hanc ejus partem, modo proximam occupans, quod semper, priore sanatâ, propinqua ejus vitium excipiat: non secus quam ignis, qui proxima quæque depascitur, ubi ea quæ prius accensa erant, deficiente jam materiâ idoneâ, prius quoque extinguuntur."

Of the writers of the middle ages I must quote Gorræus,[2] who mentions Zoster as a species of Herpes, and says—"est autem zona ignis sacri species, quæ medium ambit cingitque. Dicitur alio nomine ζωστήρ." On the other hand, his contemporary Fernelius[3] applies the term *Herpes miliaris* to an eruption consisting of papules and pustules; while he speaks of a *Herpes exedens* as giving rise to ulcers. Thus, in determining and defining the disease, he starts from an entirely different point of view. Some of the writers of the seventeenth century (Mercurialis, Sennertus) make no mention of the word Herpes, and do not even describe the affection under any other name. The definition given by Lorry[4] in the eighteenth century is the first which corresponds with our conception of Herpes. After alluding in condemnatory terms to the ancient practice of including under the name of Herpes both chronic spreading ulcers and acute inflammatory affections of the skin, he defines it in the following words:

"Solitaria vulgo nascitur una herpetis miliaris areola, cute cæteroquin integra, limbo rubello distincta. Pustulæ emicant vulgo sero repletæ sub ipsa epidermide aggregatim compositæ, interstitia replent lemæ epidermidis quæ areolam faciunt asperam. Inest major quam pro malo exoriri debere videretur cruciatus, sed mox et paucarum horarum intervallo subnascitur altera pustularum agglomeratio, quam aliæ mox confertim adnatæ per plurium dierum spatium excipiunt."

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[1] T. 1283, 'Meth. Med.,' lib. ii, cap. 12.

[2] 'Def. Medic.,' lib. iv, Francof., 1578, p. 156.

[3] 'Universa Medicina,' Francof., 1592, p. 341.

[4] 'Tract de Morbis Cutaneis,' p. 294.

Plenck[1] gives a very different description of Herpes, which he defines as follows:—"Est papularum chronicarum ichoroso-squamosarum semper ulterius serpentium agmen." He admits six species of his Herpes or Serpigo: *H. simplex* (prurigo?); *H. exedens* (lupus?); *H. miliaris* (acne?); *H. pustulosus* (impetigo?); *H. syphiliticus;* and *H. spurius* (artificial eczema?): and he also mentions a *H. perisceles*, a *H. collaris*, a *H. cerdonum*, and a *H. a tactu toxicodendri*. Thus he collects together chronic skin affections which are entirely different, and arbitrarily tickets them as species of his genus Herpes. He mentions Zona or Zoster in his first class of Maculæ in the following words:—"Sunt vesiculæ pisiformes discretæ, atrorubræ, non raro confluentes, intense prurientes et dolorificæ, quæ instar zonæ seu cinguli ad manus latitudinem pectus vel aliam partem circumdant."

This very accurate definition of Zoster was extended by Willan, *mutatis mutandis*, to a large number of affections of the skin. He found that a painful eruption, running an acute course, and consisting of vesicles the size of peas, occurs not only in Zoster, but also on the face (especially on the red part of the lips), and on the prepuce and genital organs; and, further, that the limbs, and even the trunk, may be the seat of vesicles collected in groups having a peculiar circular form. Hence Willan, and Bateman who completed his work, distinguished the following species of Herpes:—1. *H. phlyctænodes;* 2. *H. Zoster*; 3. *H. circinatus;* 4. *H. labialis;* 5. *H. præputialis*; 6. *H. Iris*. The descriptions given by these writers of the varieties of the disease caused the previous vague and inaccurate definitions of it to be set aside; and Herpes was created into a genus, divided into species.

Some of these species, such as the *H. labialis* and *H. Zoster*, had indeed been mentioned in older writings. But others, and particularly the *H. circinatus et Iris*, seem to have been first established as special forms of disease by the observations of Willan. At any rate, I have been unable to find in any previous work either a description or a representation of this affection. It may, therefore, be justly said that Willan first placed the definition of Herpes on a solid foundation, by confining the use of the word to a particular acute affection running a typical course.

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[1] Loc. cit., p. 61.

The contemporaries of Willan and subsequent writers have generally followed him in his definition of Herpes; but there have been some who have contended against this view, among whom Alibert in particular requires mention. This dermatologist, in each of his two systems, made of the so-called "Flechtenübel" a special genus, to which he gave the name of *Dartres*. In his earlier classification this forms the third class of cutaneous diseases, and includes seven species. These are—(1) the *H. furfuraceus*, consisting of two varieties—the *H. f. volitans*, and the *H. f. circinatus;* (2) the *H. squamosus*, which is further subdivided into four varieties—the *H. s. madidans*, the *H. s. orbicularis*, the *H. s. centrifugus*, and the *H. s. lichenoides*. (These affections all correspond more or less closely to the modern definition of *eczema*.) (3) the *H. crustaceus*, including the *H. c. flavescens*, the *H. c. procumbens*, and the *H. c. musciformis*. (These belong partly to the Eczemata, partly to the so-called Impetigines.) (4) The *H. exedens*, which is again divided into the *H. e. idiopathicus*, the *H. e. scrophulosus*, and the *H. e. syphiliticus*. (These either belong to lupus or are syphilitic affections.) (5) The *H. pustulosus*, including *mentagra* and *gutta rosea*, and also *comedones* and *acne*, which are described as the *H. p. miliaris*, and the *H. p. disseminatus;* (6) the *H. phlyctænoides*, under which head he speaks of a *H. p. confluens*, a rare and altogether unknown skin affection, and also a *H. p. zoniformis*, which appears to be that which we know as Zona or Zoster; (7) the *H. erythemoides*, including a *H. e. urticatus*, which we ought perhaps to regard as corresponding to the ordinary forms of erythema, or to the *E. papulatum* and to *Urticaria*.

It will at first sight be evident to every one who has the least acquaintance with dermatology, that Alibert was at the pains to collect together a number of distinct diseases, acute and chronic, local and general, idiopathic and constitutional, placing them in one class under the name of Herpes. This classification introduced fresh confusion into the diagnosis of cutaneous affections, instead of making it clearer.

In the later system of Alibert, the "Dartres" or Herpetes" constituted the fourth group. This also included a smaller number of diseases, for it was made to consist of four subdivisions, of which one only received the name of Herpes (*Dartres ordinaires* of the French). This, however, was further divided into the *H. furfuraceus* (including the *H. volaticus* and *H. circinatus*, the last being synonymous with the English "ringworm" and the German *H. tonsurans*), and the *H. squamosus* (made up of the *H. madidans, orbicularis, centrifugus,* and *lichenoides*). Thus he endeavoured to set aside altogether the definition of Herpes which had recently been brought forward by Willan.

Alibert, indeed, was particularly strenuous in his opposition to Willan's use of the term Herpes. He accused the English dermatologist of having taken away its old and given it a new meaning; a change in which he could see no advantage, and which he characterised as unfortunate. But most of his contemporaries and successors adhered to Willan's definition, and Alibert was soon without any followers in his use of this word.

To the affections called by Willan the *H. phlyctænodes, circinatus, labialis,* and *præputialis*, Alibert gave the name of *Olophlyctis*. He dismissed them summarily as forms of eczema. Thus he described an *Olophlyctis miliaris*, an affection of an annular character, appearing on the trunk and limbs, but having no very definite seat. This, according to Alibert, corresponds to the *H. circinatus* and *Iris* of Willan and Bateman. He also mentioned an *O. volatila*, synonymous with the *feu de dents, feu volage des enfants*, with the *ignis sylvestris*, and with the *Strophulus volaticus* of Willan; an *O. prolabialis* and an *O. progenitalis*, which appear to be equivalent to the *Herpes labialis* and *H. præputialis* of Willan; and, lastly, an *O. hydroica*, which answers in part to the hydroa of the Greek writers, in part to the affection known by the name of sudamina.

As I have already stated, Alibert's classification was not even accepted in his own country, either by his contemporaries or by the writers who immediately succeeded him. The use of the word Herpes, introduced by Willan, was adopted even by Biett, and has been since followed by Rayer, Cazenave, Schedel, Gibert, Chausit, Duchesne-Duparc, in France; by Plumbe, A. T. Thomson, Er. Wilson, Jon. Green, Fox, and Hillier, in England; and lastly, by Riecke, Simon, and myself, in Germany.

A few, however, of the earlier and also of more modern dermatologists have expressed their dissent from the nomenclature of

Willan, and have either preferred to go back to the definition of Herpes given by the old Greek writers, or endeavoured to frame definitions of their own applicable to its various forms. Thus, among the Germans, Joseph Frank mentions this disease now by the name of Hitzbläschen or "Fieberbläschen"[1] (*Herpes labialis*), now under the head of "Flechten,"[2] now as a separate affection which he terms Zoster;[3] and which he describes as entirely distinct from the other kinds of Herpes.

Again, Fuchs makes an arbitrary division of the affections described by Willan under the name of Herpes. Some of these he includes in his family of "Eczematosen," belonging to the class of "Dermatonosen;" and he terms these the *H. miliaris s. phlyctænoides*, and the *H. figuratus*. He also enumerates under the same head, as varieties, the *H. circinatus* and the *H. Iris*. But he treats of Zoster as a distinct disease, placing it among the "Dermexanthesen," the 3rd order of his 23rd class, the "Erysipelatosen."

V. Bärensprung considers that the term Herpes properly belongs only to a parasitic skin affection, which makes good its claim to that title by its annular form, and by its creeping (kriechend) character, and which is further distinguished by being communicable from one patient to another. Thus, he thinks that the use of this name should be confined to the *H. circinatus*, the ring-worm of English writers, the *Porrigo scutulata* of Willan, the *Herpes tonsurans* of Cazenave. Zoster and the *H. labialis* and *H. præputialis* (which are allied to it), are placed by him in a distinct species, to which he gives the name of Gürtelkrankheit.

Besides the accounts of Zoster to be found in some of the older medical works (such as that of Mehlis[4]), this affection has, within the last few years, been described by many writers of note, and particularly by v. Bärensprung,[5] Joswich,[6] Gerhardt,[7] Singer,[8] Romberg, and Heusinger. The *Herpes tonsurans*, as Cazenave named it, was formerly treated of by Plumbe and Mahon; and more recently full descriptions of it have been published by Malmsten, Gruby, Bazin, Köbner,[1] and myself.[2]

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[1] Op. cit., Band iii, p. 9.

[2] Ibid., p. 137.

[3] Ibid., Band ii, p. 618.

[4] 'Commentatio de Morbis Hominis dextri et sinistri,' Göttingen, 1818.

[5] 'Die Gürtelkrankheit,' Berlin, 1861.

[6] 'De Zoostere,' Hallæ, 1852.

[7] 'Jen. Ztschr.,' ii, 3, 1865.

[8] 'Allg. Wien. Med. Zeit.,' 1858, p. 209.

If we look over the historical account of Herpes given above, we find that this term has been employed in three distinct senses. First, it has been used as a comprehensive name for chronic skin affections in general, or, as they were called, Flechtenübel, Dartres, Tetters, Erpeti, &c. Secondly, it has been applied to an acute disease of the skin, attended with the formation of vesicles, and occupying particular regions of the body. In this case it is made a generic term, including several species, among which is Zoster. Thirdly, it has been employed to designate an affection caused by the growth of a vegetable parasite, and taking the form of red scaly patches, or of groups of vesicles and rings, or, again, leading to the loss of the hair; this last variety being that which was formerly known as "Tinea tondens," and which has been termed by Willan "Porrigo scutulata," by other English writers "ringworm," by Gruby "Rhizophito-alopecia," by Köbner "Mycosis tonsurans," by Bazin "Teigne tonsurante," and by Cazenave "Herpes tonsurans." Malmsten gave to the vegetable parasite found in this disease the name of *Trichophyton tonsurans.*

This multiplication of terms is certainly of no advantage to dermatology; and one cannot but remark that Willan and Cazenave might easily have chosen different names for the affections which they described. But as they did not adopt this course, it seems to me more advisable to adhere to the use of appellations which are established, rather than to introduce still further confusion into medical nomenclature by inventing new ones.

For this reason, I adopt the definition of Herpes given by Willan. I understand by this term a disease of the skin, having the following characters:—*It is benign, runs an acute course, and is attended with the formation of miliary papules, which are arranged in groups, and generally undergo development into vesicles and pustules as large as lentils, or even still bigger. It is never distributed over large tracts of the cutaneous surface, being always confined to certain definite regions. After remaining a few days, or as long as four weeks, this*

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[1] 'Klinische Mittheilungen aus der Dermatologie und Syphilidologie,' Erlangen, 1864; Mycosis tonsurans, p. 6.

[2] 'Ztschrft. der k. k. Gesellschaft d. Aerzte,' 10 Jahrgang, 2 Band, p. 473.

eruption dries up into flat crusts, which often leave scars when they fall off.

This definition, however, requires to be modified to a certain extent, according to the seat of the affection. In different parts of the body there are differences in the relative importance of its symptoms, as well as in the way in which the vesicles are grouped, and in the *pattern* of the disease.

It is therefore necessary to divide the genus Herpes into several species, which require separate description. I accordingly distinguish the following:

a. Herpes labialis, or, as I prefer to term it, *H. facialis.*
b. H. præputialis, or rather *H. progenitalis.*
c. H. Zoster.
d. H. Iris et circinatus.

In the important work to which I have already referred, and which has hardly received the attention which it deserves, v. Bärensprung suggests that the first three of these species of Herpes are in reality but one affection, and should be included under the name of Zoster. The reasons which he gives for this opinion are, that they are all found in regions supplied by particular nerves, and that the development of the vesicles is, in all of them, due to some morbid condition of the nerve. When such vesicles occupy the whole extent of the part to which the affected nerve is distributed, a *H. Zoster* is the result. He supposes that the *H. labialis* is an incomplete *Z. facialis* (answering to the infra-orbital and mental branches of the second and third divisions of the fifth nerve), and that the *H. progenitalis* is a rudimentary *Z. sacro-ischiadicus et sacro-genitalis,* due to a morbid condition of the inferior pudendal nerves and of branches of the pudic nerves, arising from the sacral plexus, and supplied to the penis and scrotum, or to the labia.

But, plausible as this view is, and supported by anatomical considerations, it nevertheless appears to me to be not altogether consistent with clinical observations. To the practical physician, a diagnosis resting upon an anatomical basis of a conjectural kind has no weight if it is in any way opposed by the symptoms of the patient. In determining the essential nature of a disease, we should certainly not attach more importance to its mere anatomical characters than to the results of observation at the bedside concerning its seat and distribution, its course, and the complications by which it is attended—particularly if these features are uniform at all times and in every country in which the complaint is met with. Indeed, in the case of Zoster, it was the clinical physician who drew the attention of the anatomist to the fact that the disease is accompanied with a special nervous affection; and surely we ought to listen to the opinion of the former with regard to the relation between Zoster and the *H. facialis* and *H. progenitalis*, before doing away with the separate existence of the last-mentioned species of Herpes.

Now, clinical observation furnishes us with many reasons for retaining the distinctions hitherto admitted between these forms of Herpes. Among these reasons are the following:—

1. In the *H. labialis* and the *H. præputialis* there is generally only one group, or but a very small number of groups, of vesicles; whereas in Zoster this is the case only in very exceptional instances, several clusters being developed in succession.

2. Zoster seldom returns; it generally appears only once in the life of an individual, whereas in *H. labialis* and *H. progenitalis* the reappearance of the disease is the rule.

3. It is a well-known fact that *Herpes labialis* occurs in the train of febrile complaints; it has even received the name of *Hydroa febrilis*. Hence this affection appears to be symptomatic, and due to some past or actually existing disease attended or unattended with fever; whereas Zoster is to be regarded as the result of a morbid condition, more or less accurately confined to the tract supplied by a particular cerebro-spinal nerve.

4. Neuralgic pains precede the eruption of Zoster, accompany it, and often remain for a long time after its disappearance. This symptom is never observed in the *H. labialis* or the *H. præputialis*.

5. The *H. labialis* and *progenitalis* are not generally unilateral, but more often affect both sides, or appear in the middle line of the body. V. Bärensprung,[1] indeed, disputes the complete accuracy of this; but, as it appears to me, he is wrong in doing so.

Again, the *H. Iris* and the *H. circinatus* should, in my opinion, be retained as distinct species; and I may here state my belief that the second of these is not identical with the *H. tonsurans* of Cazenave.

On the other hand, I do not admit the existence of a *H. phlyctæ-*

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[1] Op. cit., p. 18.

under (Willan), or of a *H. squamosus* (Cazenave). The first of these is a partial Zoster, occurring chiefly on the limbs; the second is probably a macular form of the *H. tonsurans*.

I now pass on to describe the different species of Herpes; and the first of these, in anatomical order, is the *H. facialis*.

1. *Herpes facialis, seu labialis. Hydroa febrilis.* (The Olophlyctis of Alibert.)

Herpes may arise on any part of the face. It is certainly most common on the lips, but it may occupy the nose (and even the nasal mucous membrane), the cheeks, the forehead, the eyelids, the conjunctiva oculi, the external ear (*H. auricularis*), the red parts of the lips, the inner surfaces of the lips and cheeks, the mucous membrane of the oral cavity, and that of the hard and soft palate, of the uvula, and even of the tongue (*H. linguæ*). The appearance of this affection when it attacks the skin is, however, different from that which it assumes on the mucous membranes.

It is evident from what I have just stated that the name *H. facialis*, being more comprehensive, is more applicable to this disease than that by which it is generally known. For it would certainly be strange to call an affection of the *nose* or *forehead* a *H. labialis*.

On the cutaneous surface this eruption consists of vesicles distended with a clear watery fluid, and arranged in clusters. These vesicles are rarely numerous, and there are generally only a few of the clusters, all of which usually appear at the same time and pass through their subsequent changes simultaneously. The outbreak of a *H. facialis* is often preceded by a burning pain in the part, but this finally disappears when the vesicles have become fully developed. These are themselves of but short duration; their contents rarely become purulent, and soon dry up, with the epidermis which formed the roof of the vesicles, into brown scabs; and when the scabs fall off, the skin beneath is found to have resumed its normal appearance.

On the red parts of the lips the vesicles occupy a smaller area; the fluid which they contain is not so clear and transparent; they generally coalesce, and quickly dry up into rather thick, brown crusts.

Within the oral cavity this affection presents different characters.

The formation of vesicles does not go beyond its earliest stage, for the epithelium of the mucous membrane is too delicate to be able to retain, for more than a very short time, the fluid which collects beneath it. Hence, the vesicles soon burst, and we then perceive a number of white spots, perhaps as large as lentils, due to the macerated condition of the epithelium; or, if this has become detached, certain shallow excoriations mark the points previously occupied by vesicles. The mucous membrane of the mouth being continually washed with saliva and mucus, crusts cannot form upon it in herpes, any more than in variola; and when the white spots or the shallow excoriations have remained for a short time, the part returns to its normal condition.

The subjective symptoms to which herpetic affections of the interior of the mouth give rise are merely such as would be produced by excoriations, or by any changes which deprive the surface of its natural covering. The patient complains of a burning sensation when he speaks or chews any hard substance, or smokes tobacco, or eats any hot, sour, very salt, or highly seasoned food.

When this disease affects the uvula, or other parts of the soft palate, it is apt to be mistaken for an angina, in consequence of the unpleasant sensations to which it gives rise. On the other hand, herpes of the anterior part of the oral cavity, and especially of the gums and tongue, may easily be confounded with aphthæ.

An herpetic affection of the skin of the face, the red parts of the lips, and the mucous membrane of the mouth, sometimes occurs in perfectly healthy subjects, being then the only morbid condition which is to be detected; but, in other instances, such an eruption precedes or accompanies the outbreak of a febrile or non-febrile complaint.

Now, it is true that the *Herpes facialis* appears more frequently in intermittent fever, pleurisy, pneumonia, and certain catarrhal maladies, than in other diseases. But it is no less certain that this eruption may arise in the course of various complaints, and even in continued fever (Typhus).[1] It was long maintained that, even when all the characteristic symptoms of this disease are present, a case must not be regarded as one of fever, if a *H. labialis* should develop itself; but further observation has shown that this is not correct. I have myself seen, both during life and in the dead body, the most marked herpetic eruptions in typical cases of fever. Von

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[1] Vide note to p. 300.

Bärensprung,[1] indeed, clings to the older view, having never himself observed herpes in a case of typhus; but it can be regarded only as an accident that such a combination has never presented itself to him, for all the physicians connected with the hospitals of this city admit that it sometimes occurs, and they are undoubtedly right.

Again, it was at one time fancied that the breaking out of a *Herpes labialis* in the course of some other disease is a favorable sign, indicating that a *crisis* has occurred, and that the progress of the complaint is checked. But this notion also has been shown by experience to be without foundation. Observation teaches that this form of herpes is neither of good nor of bad augury, with reference to the probable issue of the disease which it accompanies. We are still altogether in the dark as to the relation between the *H. facialis* and these complaints.

As to the liability to the recurrence of this affection, I may mention that in some cases it returns at pretty regular intervals; as, for instance, every month.

2. *Herpes progenitalis. H. preputialis* (The *H. pseudosyphilis* of Fuchs.)

This affection, although most commonly observed on the prepuce, is not infrequent on the dorsum of the penis and on the glans. Moreover, it may appear on the female genital organs, as, for instance, on the labia or the mons veneris. It consists of vesicles, generally few in number, containing a transparent fluid, arranged in groups, and often forming one single group. The commencement of this disease may or may not be preceded by sensations of burning or pain; in some cases it breaks out quite suddenly, accompanied by these symptoms. Unless the vesicles are ruptured by scratching or rubbing, this form of herpes lasts only for a few days, for the fluid soon dries up, and thin crusts are formed; and when these fall off the surface is found to be healthy, or, perhaps, slightly reddened. But if the vesicles are injured by scratching, or are kept constantly moist (as when they are seated on the inner lamina of the prepuce), they often lose their epidermic covering, and pass into excoriations; while, in other instances, they acquire a flat white coating of macerated cuticle, and therefore look like small ulcers.

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[1] Op. cit., p. 21.

Even when they present this appearance, however, they always become covered with thin scabs, when the epidermis dries; afterwards, on the falling off of these scabs, they heal, without leaving any cicatrices.

But, although the description which I have just given of the *H. progenitalis* is perfectly true to nature, yet I must not suppress the fact that various impediments stand in the way of the recognition of this affection in practice. Indeed, it is sometimes impossible to determine whether we have to deal with a simple herpes or with a syphilitic affection. It was this very difficulty which led the syphilologists Hunter and Ricord to practise inoculation for diagnostic purposes. For if it were, in every instance, so easy to distinguish a chancre or syphilitic ulcer from a herpes or sore which is not syphilitic, these observers would have had no reason for making it a *conditio sine quâ non* in the diagnosis of a chancre that inoculation should be successful, and should produce a pustule.

I would insist particularly upon this point, because I have repeatedly seen cases of this kind in which mistakes have been made even by professed syphilologists. The surest way to avoid such errors is, no doubt, to perform inoculation; but we may attain the same end just as quickly without it, by simply making it a rule to give no diagnosis until we have had an opportunity of watching carefully the further course of the case. If the affection be a herpes we shall find, within a few days, that all the morbid appearances subside, leaving no induration nor any cicatrix; whereas in syphilitic affections the surface of the excoriation or ulcer becomes clean only after a longer period, the process of cicatrization takes more time, and, after the sore has healed, its base still remains indurated.

This form of herpes, like the *H. facialis*, is liable to recur. Some persons, without any known cause, find herpetic eruptions on their genital organs, perhaps five or six times a year; and this may go on for many years in succession, until, at last, the disease ceases to make its appearance.

(*f*) *Zoster abdominalis.*
(*g*) „ *femoralis.*[1]

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[1] V. Bärensprung has given a somewhat different description of *Herpes Zoster*, according to its place of origin and mode of distribution.

Now, although I think that the forms of zoster enumerated above by myself are quite sufficiently numerous, it nevertheless appears to me to be desirable to quote from the classical work of v. Bärensprung the names and general distribution of the different varieties described by him. These are as follows :—

(*a*) The "*Zoster facialis*," always confined to one half of the face, occupies the surfaces of the skin and mucous membranes supplied by the fifth nerve. A form of it is the "*Z. labialis.*"

(*b*) The "*Zoster occipito-collaris*" follows the distribution of the occipitalis minor, auricularis magnus, and superficialis colli nerves, derived from the cervical plexus.

(*c*) The "*Zoster cervico-subclavicularis*" corresponds to the descending (suprasternal, supra-clavicular, supra-acromial) superficial branches of the cervical plexus.

(*d*) The "*Zoster cervico-brachialis*" is due to a morbid condition of nerves belonging to the brachial plexus. It may be confined to the upper arm (*Z. brachialis*), or the forearm, or even the hand.

(*e*) The "*Zoster dorso-pectoralis.*"—In this form the affection begins over the spinal column, generally occupying a surface corresponding to three vertebræ; it spreads obliquely downwards to the side of the chest, and thence passes, ascending slightly, to the sternum. The nerves concerned in this variety of zoster are the third to the seventh dorsal.

(*f*) The "*Zoster dorso-abdominalis*" affects the lower part of the back, its upper limit being the eighth dorsal, its lower the first lumbar, vertebra. It extends over the surface of the abdomen as far as the linea alba.

(*g*) The "*Zoster lumbo-inguinalis*" begins in the lumbar region, and spreads horizontally forwards to the linea alba, obliquely downwards and forwards to the mons veneris and genital organs, and also downwards to the skin of the gluteal region and the outer surface of the thigh. It corresponds to branches of the upper lumbar nerves.

(*h*) The "*Zoster lumbo-femoralis*" occupies the distribution of the external cutaneous, genito-crural, anterior crural, and obturator branches of the lumbar plexus. The wide cutaneous distribution of these nerves enables us to understand how extensive and severe this variety of herpes may sometimes be. In other cases it is confined to the surface of the thigh, only certain branches of these nerves being then affected (*Z. femoralis*).

(*i*) The "*Zoster sacro-ischiadicus*" answers to the cutaneous supply of the branches of the sacral plexus.

V. Bärensprung regards the "*Zoster genitalis*" (Herpes præputii et vulvæ) as due to a partial affection of these nerves.

[An abstract of Prof. v. Bärensprung's paper on "Herpes" will be found in the 'British and Foreign Medico-Chirurgical Review' for January, 1862, p. 243.—Ed.]

I must in this place refer also to the elaborate investigations of Prof. Voigt

But, before passing on to give a detailed account of each of these local varieties, I must remark that, in every one of them, a regular form may be distinguished from certain modifications of it which are abnormal. The following are the characters which I consider to belong to this disease in its normal form.

1. The vesicular eruption presents the appearance which I have described as belonging to herpes in general. It passes through certain changes and subsides, leaving no cicatrices. I may also remark in this place that the first-formed clusters of vesicles are always nearest the nervous centres, and that those which subsequently develop themselves lie more towards the remote peripheral distribution of the corresponding nerves.

2. The rash is confined to one half of the body; but clusters of the vesicles exist over the whole of the region which should present them, according to the definition of the local variety of *Herpes Zoster* to which the case belongs.

3. No extraordinarily severe pain precedes the appearance of the rash, nor is its subsidence followed by any intense or long continued suffering.

4. The vesicles contain merely transparent serum, or, in some cases, a puriform fluid.

On the other hand, I regard as anomalous—

1. Those cases in which some part of the eruption (or the whole of it) presents characters differing from the normal type which I have described. Thus, the rash sometimes remains in the papular stage; while, in other instances, bullæ arise, or pustules, which attack the deeper structures of the skin, and are followed by cicatrices.

2. Those exceptional instances, in which *Herpes Zoster* arises

with respect to the cutaneous distribution of the cerebro-spinal nerves, the results of which investigations are given in his work, already mentioned (see page 249), published by the Imperial Academy of Sciences. On the head, neck, and limbs, the tracts of nervous supply (Verästelungsgebiete) pointed out by Voigt agree perfectly with the results of observation in cases of zoster. On the trunk, however, the correspondence seems, at first sight, to fail. For the dorsal and lumbar nerves are distributed to the skin by three separate sets of branches (posterior, lateral, and anterior), which form as many "tracts of nervous supply" running *vertically* on either side of the body. In reality, however, each of the dorsal and lumbar nerves takes a separate course forwards from the spine to the front of the trunk, and the position of the vesicles of zoster accords perfectly with the distribution of these nerves.

symmetrically on both sides of the body; and likewise those in which only a few clusters of vesicles attain their full development, the others being altogether absent, or appearing merely as minute points (Pünktchen), which soon abort and die away.

3. Those in which severe neuralgia accompanies the attack of shingles, preceding the eruption, or continuing even after the vesicles have dried up into crusts. It often happens that the persistence and the intensity of this symptom render the disease a very painful one; and, in some cases, the functions of the motor nerves also are interfered with.

4. Those, lastly, in which blood is mixed with the fluid contained in the vesicles, or in which hæmorrhage even occurs into their floors. The eruption then has an appearance very different from that which it usually presents; it is the seat of most severe pain, and is always followed by the formation of cicatrices.

I may now describe in order the local varieties of *Herpes Zoster* which I have already mentioned.

(*a*) *H. Zoster capillitii.*—This often appears on the forehead and scalp, in the course of the *supra-orbital*, a branch of the first division of the fifth nerve, passing from the supra-orbital notch upwards to the top of the head. In some of these cases the eye also is affected; the vessels of the conjunctiva and those which supply the cornea being injected, and severe pain being complained of by the patient. Under these circumstances, indeed, the mobility of the iris may be so much impaired that the disease may simulate an *Iritis*.

In other instances the eruption begins at the back of the head, spreads in the form of an arch over one parietal bone, and terminates in the neighbourhood of the coronal suture. This variety of *Herpes Zoster* is well seen only in persons who are bald; and such a case may be found in the first number of Boeck's '*Atlas der Hautkrankheiten*.' In a patient whose head is thickly covered with hair, it is difficult to detect this form of shingles.

(*b*) *H. Zoster faciei.*—In this variety numerous clusters of vesicles develop themselves on the cheek, whence they pass over the side of the nose towards its bridge, gradually becoming smaller as they approach this point. I have twice seen this affection bilateral. It then appeared quite symmetrically on the two sides of the face, and gave the patient scarcely any pain.

(*c*) *H. Zoster nuchæ* (the *H. collaris* of Plenck, the *Z. occipito-collaris* of v. Bärensprung). In this form of shingles the eruption first makes its appearance on the side of the neck over the second and third cervical vertebræ, and extends thence upwards towards the lower jaw and face, forwards over the larynx, and, lastly, downwards, a few clusters reaching even as far as the second rib.[1]

(*d*) *H. Zoster brachialis.*—In this variety the first vesicles appear opposite the fifth, sixth, and seventh cervical, and the first dorsal vertebræ; and the affection then passes down the arm, occupying both the extensor and the flexor surface (but especially the latter), and extending down to the elbow, or even along the forearm, as far as the little finger. The whole of the skin supplied by the brachial plexus, down to the peripheral distribution of the radial and ulnar nerves, may thus be the seat of shingles.

(*e*) *H. Zoster pectoralis.*—When *Herpes Zoster* breaks out on the surface of the chest its distribution in general corresponds with the inclination of the ribs; for the groups of vesicles run parallel with them, or rather with the *intercostal nerves*, the direction of which is the same as that of the ribs. Near the spinous processes, where the earliest clusters make their appearance, the vesicles cover an area answering to two or three vertebræ. From this point the eruption at first passes downwards over the side of the thorax, but afterwards ascends on approaching the anterior wall of that region, and terminates over the sternum in the median line of the body.

In its progress round the chest the *Herpes Zoster* does not spare the skin over the breast, as has been erroneously asserted by some writers. Another point which may be mentioned is that in this form of shingles the pain is frequently so severe and so intensified by the movements of respiration that it gives rise to dyspnœa. Indeed, the affection may in this case be easily mistaken for a pleurisy in its early stage.

(*f*) *H. Zoster abdominalis.*—This variety corresponds to the distribution of the lower dorsal and lumbar nerves, which supply the muscles and skin of the abdominal wall. The eruption passes forwards round the abdomen, and terminates in the median line, a few clusters of vesicles often appearing on the *mons veneris*. In many cases of this affection the movements of inspiration and expiration, and all straining efforts of the abdominal muscles, give rise to pain, as in the *H. Zoster pectoralis*, though not to the same degree as in that form of the disease.

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[1] Vide Cazenave, 'Leçons sur les Maladies de la Peau,' Paris, 1856, p. 41, Planche 8.

(*g*) *H. Zoster femoralis*.—This appears sometimes on the anterior, sometimes on the posterior, surface of the thigh; and, in the latter case, may extend down as far as the ham or even to the calf of the leg. The first cluster of vesicles is generally observed on the buttock; indeed, the affection often remains limited to this part, instead of spreading downwards.

Whether attended or not with febrile symptoms, *Herpes Zoster* is always preceded by pain of more or less intensity. But this symptom is by no means sufficiently characteristic to enable us, when it alone is present, to infer with any degree of certainty that an attack of shingles is impending. In fact, a positive diagnosis cannot be made until the eruption appears in the form of points (Stippchen), papules, or vesicles, arranged in groups, and occupying the parts of the surface above mentioned, and until the affection begins to spread in the manner I have already described.

All the vesicles in any one cluster always appear simultaneously, and are therefore coeval. Hence they invariably all present the same characters. In some instances they assume the vesicular form so quickly, that the earlier stages of their development altogether escape notice. In other cases they pass gradually from papules into vesicles having an umbilicus; the changes which they then undergo being just the same as those through which the smallpox eruption passes. Indeed, the fluid contained in these herpetic vesicles afterwards becomes opaque and puriform; and thus they also are converted into pustules. A little later still a red border forms round each of these pustules, so that, if they are closely packed together, they appear to be seated on a common red base. At the end of some days their contents dry up, forming firmly adherent crusts of a yellow or brown colour. When these crusts fall off, the skin is found to be marked by shallow depressions, and it may even present permanent cicatrices.

The number of distinct clusters of vesicles is not the same in all the forms of shingles. They are fewest in a *H. Zoster facialis*,

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and most numerous in a fully developed *H. Zoster femoralis*; the difference being, of course, fully explained by the fact that the surface affected is in the one case very much smaller than in the other.

Herpes Zoster lasts from two to four weeks, according to the extent of surface affected by it, or (what is much the same thing) the quantity of the eruption.

The changes through which the vesicles pass are invariably such as I have described above. Except the pain, which precedes the eruption, and is often particularly severe after decrustation has taken place, the only unpleasant symptom ever observed in cases of shingles is the continuance of suppuration (and even, in some instances, the occurrence of ulceration), beneath one or two of the crusts, when the deeper structures of the skin happen to be affected.

Herpes Zoster invariably terminates in recovery. The only condition under which we are likely to see a case of shingles on the deadhouse table is that of the patient having succumbed to some other disease.

4. *Herpes Iris et circinatus.*

These species of herpes were first observed and described under these names by Willan. They present the following characters:

The *Herpes Iris* consists of groups of vesicles, arranged in a peculiar manner. A vesicular ring (Bläschenkranz oder Bläschenwall) surrounds a central vesicle; outside this ring, at a little distance, a second one sometimes exists; and even a third is sometimes observed, all of them being concentric. It seldom happens that all the groups of vesicles exhibit these characters, which are generally confined to a few of the clusters, or may even belong to one of them only; the vesicles in the other groups having coalesced so as to form bullæ, or being very few in number, and merely placed side by side.

This remarkable disease owes its peculiar form to the fact, that the vesicles subsequently developed arrange themselves round the one which first made its appearance, and thus comes to occupy their centre. In other words, successive outbreaks (Nachschübe) occur, the new vesicles being placed as close as possible to, and therefore round the circumference of, those which preceded them. There are, indeed, other diseases of the skin, in which the efflorescence, in any subsequent outbreaks, occupies the immediate neighbourhood of that which first appeared; and thus *Herpes Iris* bears a resemblance to these affections, among which are certain forms of variola, during the *stadium decrustationis*, or (in the case of varicella of the trunk of the body) even during the *stadium eruptionis*. For we frequently find, round the crusts formed by the desiccation of the earliest small-pox pustules, vesicular rings, produced by a subsequent exudative process. This often gives to the affection the appearance of a *Herpes Iris*, or, in some instances, rather of a *rupia;* the latter being the case particularly when the further changes arise at a time when the first-formed pustules have already dried up, and formed crusts.

The course of this form of herpes differs in some cases from that of the previously described species, in the fact that the peripheral development of vesicles continues for some time, while the central one is already undergoing involution, so that at last nothing is to be seen but vesicular rings, surrounding a central space which may be the seat of pigment, or covered with scales, or even already restored to a normal condition.

These were probably the cases which caused Willan to form the species known as the *Herpes circinatus*. I am, however, unable to admit the existence of this affection as a special form of the disease. I have never seen such vesicular rings apart from the mode of development which I have just described, and I must therefore regard them merely as instances of a *Herpes Iris*, spreading at the periphery.

The *H. Iris*, then, bears the same relation to the so-called *H. circinatus* that the *Erythema Iris* bears to the *E. annulare :* just as this last always develops itself from an *E. papulatum* or an *E. Iris*, so does a *H. circinatus* always arise from a *H. Iris*. Moreover, all these affections correspond so markedly in their course and form, as well as in their mode of development and in their seat, that I am greatly tempted to regard them all as modifications of the same disease. Indeed, the truth of this view is rendered certain by cases which I have had occasion to observe, in which there have been present at one and the same time appearances which were, at some points, those of the *Herpes Iris* and *circinatus ;* at others, those of the *Erythema papulatum, Iris,* and *annulare*.

Like the corresponding forms of erythema, the *Herpes Iris* and *circinatus* appear most frequently on the backs of the hands and feet and on the fingers and toes, and next on the forearms and legs. They are less commonly observed on the upper arms or the thighs, and only in exceptional cases on the trunk or the face. But although a universal *H. Iris* is thus a very rare affection, it yet does sometimes occur, and I have had occasion to see it.

We may find a further analogy between the affections of which I am speaking, in the circumstance that all these forms, both of erythema and of herpes, have a tendency to recur for several years in succession in the same month, this being generally either April, May, October, or November.

The duration of a *H. Iris* depends on the number of rings which are successively formed. If the affection terminates with the formation of the first vesicle, or after a few succeeding ones, it runs through its course in a fortnight, without any further consequences than slight desquamation and pigment deposit. If, however, a *H. circinatus* develops itself, that is, if rings are repeatedly formed round the original vesicle, the duration of the disease may easily extend to a month.

The sympathy of the organism generally is for the most part very slight, so that the patient often has his attention directed to the presence of the eruption merely by unpleasant sensations of burning, or perhaps itching, at the spots which are occupied by it. Neither fever nor any gastric nor cerebral symptoms—neither affections of the mucous surfaces, nor of the serous or fibrous structures—are present in these forms of herpes. I do not, however, mean to assert that the *H. Iris* is a merely local complaint; it may, perhaps, rather be that the general disturbance, which was the cause of the eruption, has vanished before the first herpetic vesicles make their appearance.

Herpes Iris sometimes deviates from its regular course, presenting bullæ instead of vesicles arranged in the peculiar manner above described. These bullæ are to be attributed to the rapid running together of the individual vesicles. They are, however, like those of *Pemphigus* in that they remain throughout the whole time of their existence without any further circumvallation. Ultimately their contents dry up or evaporate, or their roof gives way, breaking up into loose fragments of epidermis of greater or less size. The bullæ then undergo involution; and their course is, in fact, no less acute than in the ordinary forms of herpes. It is probable that it has been this variety of *H. Iris* which has led some observers, imperfectly acquainted with cutaneous diseases, to admit a *Pemphigus* *acutus*, as to the existence of which I have great doubts. For those who may be inclined to regard as instances of pemphigus these cases of *H. Iris*, I may here mention that even in this unusual form the affection always presents characters sufficient to enable a diagnosis to be made. This may, in fact, be arrived at, either by observing the seat of the disease, or by noticing that some one or other of the groups of vesicles has not become so perfectly confluent that the peculiar concentric arrangement can no longer be detected.

I have had occasion to observe the *H. Iris*, in both its regular and irregular forms, most frequently in young subjects, and in the female more often than in the male sex. I do not, however, mean to assert that this complaint is, in reality, more common in women. The fact may, perhaps, be due to the circumstance that men are less likely to apply for medical treatment on account of a disease which is trifling and painless, and undergoes spontaneous involution, than women, who always pay more attention to their outward appearance, and who are never indifferent to the presence of a cutaneous affection, occurring on a part of the surface which is usually uncovered. I therefore merely record it, without drawing from it any further inferences. It is at least certain that the *H. Iris* bears no relation to the genital functions in either sex, and that it is never caused by syphilis.

Etiology of Herpes.—It would be very difficult to find any grounds for asserting that all the forms of herpes owe their origin to one and the same remote cause. Indeed, it is more probable that all these species, or, at any rate, several of them, may be in relation indirectly, if not immediately, with various conditions. Thus, it would be difficult to believe that the *H. progenitalis* and the *H. Iris* derive their origin from the same source. And, on the other hand, it would also be no easy task to show clearly that different morbid states give rise to them, and what these different states are.

I may take as an example the *H. facialis*. This affection, as is well known, may accompany maladies, such as intermittent fever or pneumonia, which apparently differ widely from each other. Now this surely is a powerful argument in favour of the opinion expressed above, that the cause of herpes is not always the same. On
e other hand, observations as to the seat and mode of distri-
n of *Herpes Zoster* lead us to ascribe its origin to perverted
ation. Hence, if we choose to apply what is true of *H.*

[illegible] to the other forms of herpes also, it appears probable that the various diseases above referred to, some of which are inflammatory, while others are among the so-called nervous diseases, may produce this peculiar skin affection by acting upon the peripheral nervous system.

Treatment of Herpes.—The fact already mentioned, that each of the forms of herpes terminates within a tolerably short time, is sufficient to show that any special treatment of this disease is unnecessary.

However, experience teaches that it is not a matter of indifference whether we do or do not apply local remedies directly to an herpetic eruption, for their effect is always to retard the progress of the affection and to increase the disagreeable sensations which the disease itself is apt to cause. I refer particularly to the ectrotic mode of treatment, that is to say, to the cauterisation of the individual vesicles by means of nitrate of silver, which has been recommended in herpes as well as in other vesicular forms of cutaneous disease. By this procedure we neither hasten the termination of the complaint, nor diminish the chances of the formation of cicatrices, nor the probability that relapses may occur. We merely add to the pain caused by the disease that which results from the application of the caustic.

The same may be said also of the irritants which have sometimes been made use of, such as vesicants and sinapisms. These have been employed by some at the first onset of herpes, with the object of bringing out the eruption. At the time when the vesicles of herpes were generally supposed to contain a *materia peccans* which the organism was striving to throw out upon the cutaneous surface, the application of these irritants to the skin was certainly plausible. But now that this idea has fallen to the ground there is no justification for such a procedure, which, in fact, merely increases the pain.

Experience, then, teaches that an expectant treatment is the best, so long as an herpetic eruption is present. It is much to be wished that the same could be said with regard to the neuralgic pains caused by these affections, which sometimes give the patient great distress, and are particularly severe in cases of *Herpes Zoster.* The expectant method is, indeed, the only one which can be employed, for, at any rate, most of the remedies which have been tried in the hope of relieving these pains have proved unsuccessful. It has, however, sometimes happened that advantage has been derived from the use of local or even internal remedies in these cases. Thus, narcotics applied in the form of plasters or ointments to the spots covered with herpetic vesicles do, in some cases, relieve the severe pains, particularly if pressure is at the same time applied by means of a bandage. For this purpose any plaster may be employed which contains but little turpentine (such as either the *Empl. diabotanum*, the *Empl. lithargyri fuscum*, or the *Empl. de meliloto*), spread upon long strips of linen or leather, and dusted over with powdered opium. The plaster may be kept in its place either by an ordinary bandage or by means of a towel folded several times and fastened tightly round the body. The dressing must be changed at least once a week. I have frequently seen the pain relieved by these applications. Again, the pain may often be observed to disappear under the internal use of narcotic remedies, with or without quinine. But, unfortunately, this is not always the case, and I do not think that the administration of internal medicines is really preferable to local treatment. In my experience I have never seen any good results either from cold lotions, from hot fomentations, or from the use of collodion, tincture of iodine, narcotics, or epispastics; or, lastly, from anæsthetics, such as chloroform, ether, or the Liquor Hollandicus.

II. MILIARIA. (*Friesel.*)

Before giving a definition of the word Miliaria, as I understand it, I must, in a short historical retrospect, give an account of the meanings which various writers in different countries attach to this term, and also of the ways in which it has in past ages been employed.

Mention is made in medical works of a *Miliaria rubra*, a *M. alba*, and a *M. crystallina*. The first of these is described as consisting in an eruption of distinct, red, pointed papules or vesicles, of the size of millet-seeds (whence the name *Miliaria*). Whether they are papules or vesicles depends on the amount of fluid present. They are generally developed rather rapidly, but are invariably preceded by more or less profuse sweating; they are not of very long duration. When the summits of the papules or vesicles have a white, milky, or opalescent appearance, caused by the action of the fluid in the epidermic layers which form their roof, the name *Miliaria alba* is applied to them; but this affection is in all other respects identical with the *M. rubra*. Both these forms of efflorescence are met with in healthy persons as well as in those who are the subjects of disease.

On the other hand the *M. crystallina* is described as an eruption of vesicles containing a watery transparent fluid, and resembling dew-drops in appearance. They occur principally on the front and sides of the chest, on the skin of the axilla, and on the abdomen, but they may, in exceptional cases, be found on the limbs. They are met with even in cases in which there has been no sweating (ohne Perspiration von Schweiss), but only in patients suffering from fever (bei Fieberkranken).

Now, the last of these forms of miliaria spoken of by medical writers is the only one to which, in my opinion, the name is correctly applied. For I have been unable to distinguish by any characters (whether subjective or objective) the *M. rubra* and the *M. alba* from the affection known under the name of sudamina (Schweissbläschen, *Eczema sudamen*), which may arise whenever there is profuse sweating, and which consists in a swelling of the canals of the hair-sacs and sebaceous glands, due to the irritation of the skin. Hence, I venture positively to assert that both these varieties are to be classed under the sudamina, and have no claim whatever to the name of miliaria. I shall therefore reserve the description of them for the chapter on Eczema, to which they naturally and properly belong.

I am convinced, then,—and this opinion is shared by all the clinical teachers and physicians of Vienna,—that the only form of miliaria is the *M. crystallina*, and that this is quite distinct from the two others of which I have been speaking. It is, in fact, a special eruption, which accompanies general disorders of a febrile kind.

Thus, I have no acquaintance with the form of miliaria which is in some works described as *M. substantiva, exanthematica* (Frieselausschlag), and which is said by so many authors to occur both epidemically and endemically. With regard to the *M. crystallina*, the opinions which I have been led to form by clinical observation will be stated further on. In this place I will merely say that there is no febrile disease in the course of which the *M. crystallina* (Frieselbläschen) may not appear.

Again, we find that authors, in describing miliaria, divide its course into several stages, ascribing special characters to each. Now I must confess that what is said of these divisions and their characteristic symptoms is entirely irreconcilable with my view of this affection; for experience has taught me that miliaria differs altogether, both in its commencement and in its course, from the description of it given by these writers.

In my patients I have never observed the occurrence of the so-called *stadium prodomorum*, which is said to be characterised especially by unpleasant sensations in the skin, and particularly in the fingers and toes; which sensations have received the name of *stupor pungitivus*. Nor have I been able to recognise the special form of angina pectoris, the oppression at the chest, and the difficulty of breathing, to which the writers in question have chosen to give the title of *anxietas præcordialis;* nor to detect, by my organ of smell, the peculiar odour, said to resemble that of decomposing straw. I have, in fact, observed no single subjective or objective symptom which has preceded the eruption in every instance of miliaria. On the contrary, this affection has always made its appearance unexpectedly, and without any symptoms to draw my attention to its approach. I am therefore of opinion that it presents no objective or subjective phenomena which justify the creation of a *stadium prodromorum*.

In the *stadium eruptionis* the vesicles are said to be found principally on parts protected by the dress or the bed-clothes, and consequently not exposed to the access of air. But this is quite imaginary; for the eruption of miliaria may be observed over the sternal and clavicular regions—which are scarcely or not at all covered—and on the neck and throat, as well as on the sides of the chest, the axillæ, and the abdomen,—which parts, being protected by the clothes, are of course often of a higher temperature.

In reference to the mode of development of the vesicles, and their form during this stage, I have only to say that they always remain of the same size as when they first make their appearance. A quantity of fluid seems suddenly to collect beneath the epidermis, raising the cuticle so as to form vesicles of greater or less size. These vesicles, being of the same colour as the rest of the skin, are often detected more easily by the touch than by the sight; and thus our attention may be drawn to their presence by the rough, uneven part of the surface, which before was smooth. They always retain the same form and the same size, and they never coalesce.

In regard to their size, the smallest of these vesicles are certainly no larger than millet-seeds; but the majority of them attain the size of lentils, and some even present the characters of bullæ, being as large as beans or hazel-nuts.

Generally speaking, large numbers of them appear at once, and fresh ones are developed in the course of the next few days. Their duration varies in different cases: it is not possible, as in the exanthemata, to state precisely how many days they remain visible. They sometimes last only forty-eight hours, and in other instances they continue unchanged for weeks. In the cases which have come before me, I have never been able to confirm the statements of some writers, and particularly Fuchs, that there is a fresh eruption of vesicles every day for seven days, and that each of these eruptions has a duration of seven days, so that the whole complaint lasts a fortnight.

The fluid contained in the vesicles of miliaria has a neutral or feebly alkaline reaction, and is not ever *acid*, as has been stated. It never becomes purulent.

A special *stadium desquamationis*, again, is wanting in this exanthem. The epidermic roofs of the vesicles are, in fact, so thin and delicate, that when the vesicles burst they are torn away, and nothing remains but a fine circular edge of epidermis. Hence no shedding of the epidermis ('defurfuration'), such as occurs in morbilli and scarlatina, is observed in miliaria, particularly as the sweating continues, which is generally profuse in this disease.

From the description above given, it appears that miliaria does not possess the same characters as the exanthemata proper, and, therefore, that it is not well to classify it with these diseases. We cannot recognise in this affection any definite stages, distinguished by special signs or by a definite duration; and it is not constantly attended by any morbid changes in other parts of the organism, such as in all the true exanthemata are required to complete the perfect type of the disease. I refer, for example, to the catarrhal symptoms of measles and the sore throat of scarlet fever.

However, in works written before the present century, as well as in those which have recently appeared, and even in special treatises upon this affection,[1] we not only find the characters of a sporadic exanthem (such as purpura) attributed to the "*Friesel,*" but it is actually described as a contagious disease, and even as occurring in an endemic, and in an epidemic form. To explain these statements, we must either assume the course of the affection to have been in former times and in other countries altogether different from what it is with us, or we must suppose, which appears more probable, that other exanthematic disorders have been and still are frequently confounded with it. To this last opinion I have been led, not only by repeated conversations with physicians, such as Helm and Cipriani, who have long been clinical teachers in those countries in which the *Miliaria endemica* is said to occur, but also by the observations which I have myself had an opportunity of making in the Italian hospitals. I there frequently saw the word "Miliaria" placed on the card at the head of the patient's bed; but the patient who lay in the bed invariably presented simple sudamina or some other cutaneous affection, or was suffering from typhus, heart disease or rheumatism, or had been recently confined. Now these are the very conditions under which miliaria is apt to occur even in our own country, as an accidental and quite unimportant complication.[1]

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[1] Vide 'Der Friesel, eine historisch-patholog. Untersuchung von Prof. Dr. Franz Seitz.' Erlangen, 1852. Verlag von F. Enke.

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[1] To meet the reproaches which may, perhaps, from some quarters be cast upon me, that I am deaf to the teachings of the history of medicine, or ignorant of the literature of this subject, I will avow my belief that it is our main task to study the origin, course, and distribution of diseases *as they exist now*, and not to inquire what they were formerly. He only who is acquainted with the present, can derive benefit from a study of the past. He who will learn medicine must betake himself first to the bedside and the post-mortem table, and not to the library. The study of the history of our art should form, not the foundation, but the completion of our labours.

If, in reference to miliaria, writers on medicine had adopted this plan, they would, indeed, have been able to fill no large volumes; but they might have covered a few pages with descriptions true to nature, which would have been of more service to science than all the folios they have published.

But during the last twenty years, in the course of which time I have had under my care, in hospital practice alone, more than 80,000 cases of cutaneous disease, I have constantly found that, with regard to the most common skin affections (such, for example, as scabies), opinions prevail which are quite incorrect, and are certainly not creditable either to medicine as a science, or to medical men as its representatives. Indeed, it commonly happens that men well skilled in surgery and in internal medicine display but slight interest in anything that concerns cutaneous disease. Those who, like myself, have daily occasion to notice these facts will not be surprised that in works which appeared before the present century the distinctions between different diseases are often obscure and uncertain. Indeed, this may be in part attributed to the medical [illegible] miliaria is a special con-comitant symptom. [illegible] endemically or epidemically. I am nevertheless well aware that there is a vesicular affection which is associated with certain [illegible] diseases, namely—

1. In [illegible].—In this disease the vesicles generally arise during the second part of its course, being seen on the surface of the trunk and limbs. An eruption of this kind is very common in certain epidemics, while in others it is rare. It [illegible] appearing equally often in those which terminate favourably and in those which prove fatal, and gives us an opportunity of demonstrating the presence of vesicles after death.

2. In *Puerperal fever* (*Miliaria puerperalis*).—It being well known that puerperal fever is often epidemic, and that in lying-in hospitals it is sometimes endemic, we can easily understand that, when the vesicles of miliaria develope themselves in such cases, they may be regarded as belonging to an [illegible], a disease which [illegible] appeared for the first time during an epidemic of puerperal fever at Leipzig, in the year [illegible]. It is asserted that the *Miliaria puerperalis* (for this is the name given to the miliaria which accompanies puerperal fever) presents itself on the [illegible] particularly when these parts [illegible] have been kept too warm, [illegible] I have seen eruptions of M[illegible] in cases in which no sudorific [illegible] had been given and no poultices had been used. The vesicles have then been present on the chest and neck, as well as on the abdomen.

3. In the so-called [illegible].—This morbid process, which is certainly worthy of another name and of more accurate investigation, is frequently attended with an eruption of transparent miliary vesicles. These are observed not only when the joints are covered with cotton-wool or tow, and when hot fomentations are applied to them, but also in cases treated upon an expectant plan, or by ice-cold applications (Eisumschläge).

As is well known, this disease is often accompanied by inflammation of the pericardium, heart, lungs, or pleura—or, in other words, by

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opinions of those days, when less attention was paid to the form of a cutaneous affection, than to its imaginary source in a sweet or sour, thin or thick, state of the blood.

affections of the organs which lie in the thoracic cavity; and in this sense there is a warrant for the expression "*Miliaria pectoralis seu cardiaca*." But it must not be supposed that the miliaria occurs only as a result of disease of the heart, for this is not the case.

4. In the different exanthemata (*Miliaria exanthematica*), and particularly in *Scarlatina*, constituting the "*Scarlatina miliaris*."—This affection modifies to a certain extent the appearance of the disease, inasmuch as a number of small, whitish vesicles are seen scattered over the parts of the skin covered by the ordinary scarlet rash. These vesicles are frequently of a milky-white colour, and, therefore, might seem to be instances of the so-called "*Miliaria alba*" of authors, rather than of the *Miliaria crystallina*. However, they incontestably belong to the latter affection, as is very evident in certain cases in which both transparent and milky vesicles are present, the latter being developed from the former. In variola, again, an eruption of well-marked miliary vesicles frequently appears after the tenth day of the disease, occupying the intervals between the different pustules. In this instance, however, there are so many other morbid appearances on the skin (such as pustules, crusts, and purpuric spots), that the vesicles are not generally recognised as belonging to miliaria. Indeed, they always make a great alteration in the appearance of the case; but they are nevertheless ordinary miliary vesicles. This is proved by the further course which they take; for, instead of their contents becoming puriform, the lamellæ of epidermis which form their roofs burst or fall in, and finally become detached, as is the case in the ordinary forms of miliaria.

5. The diseases above named are not, however, the only ones in which eruptions of miliaria occur. It is, in fact, impossible to enumerate all the complaints which may be accompanied by this affection, and I can only say, in general terms, that there is scarcely any inflammatory or febrile disease in which it may not make its appearance, and without modifying in any way the nature, progress, or termination of the original malady: but it must be borne in mind that I am now speaking of the *Miliaria crystallina*, and not of the *M. rubra* or the *M. alba*, which last I regard as identical with sudamina. Now the febrile diseases in the train of which miliaria appears are often attended with no demonstrable, or at least with no easily detectable local change, or present such difficulties in diagnosis that their nature is apt to be misunderstood. Hence the eruption of miliary vesicles, being an obvious and striking feature,

has been regarded as characteristic of the complaint. These cases have hitherto been ascribed to a special exanthem, which has been called miliaria, and supposed to be a substantive disease, whereas it ought to have been regarded as merely a concomitant exanthematous rash. In support of this view, I may quote the testimony of Helm and other physicians who, at a time when the meaning attached to the term "typhus" was not everywhere the same, practised in Italy or in other countries in which correct opinions, based on pathological anatomy, had not yet found general acceptance. For these observers recorded cases of typhus in which the diagnosis was confirmed by post-mortem examination, and in which numerous miliary vesicles had been present; but they found that their professional brethren regarded such cases as instances of "*Febris miliaris*," and not of typhus. A similar illustration may be given of the affection known as the [illegible]. It is not a long time since the real nature of the morbid process which gives rise to puerperal fever was first made clear by pathological investigations. But, before this was done, puerperal cases, which were attended by a miliary eruption, were regarded as belonging to a substantive fever, which was termed Miliaria. At the present day these views are as obsolete as the [illegible] milk was liable to undergo [illegible] and to the [illegible]

Pathology.—[illegible] differences [illegible] other complaints in the [illegible] occurs, that we cannot suppose the [illegible] by the same agency which gives rise to the primary disease. On the contrary, we conclude [illegible] that the exciting cause of the miliary rash is [illegible]. And since we observe that the miliaria appears, not [illegible] of the primary disease, but only at a later period [illegible] when it has come to an end, we may naturally suppose that this pathological process is itself the cause of the morbid condition which gives rise to the eruption. Now it is observed that shiverings are a frequent precursor of this cutaneous affection, and that in many cases (as, for example, in puerperal fever) it is connected with purulent infection. Indeed, deposits of pus are sometimes actually present when the miliaria

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[1] See footnote, p. 300

first makes its appearance; and even when they are formed afterwards, the morbid condition which causes them always existed before the rash was developed. Hence it is a reasonable supposition that miliaria is always the result of a pyæmic process.

I do not conceal from myself the fact that even now no very strict meaning is attached to the term pyæmia, and that it is left for the future to give a more precise explanation of this morbid state. But there is no doubt whatever that the *Miliaria crystallina* developes itself only as a result of a morbid process of which the conditions and symptoms are those of pyæmia (so far as these are at present known and understood), and, therefore, that the existence of this rash indicates the presence of pyæmia.

Diagnosis.—At the commencement of my account of this disease, I carefully laid down the distinctions between the *M. rubra*, the *M. alba*, and the *M. crystallina*. The first two of these affections I stated to belong to the *Sudamina*, and to be artificial eruptions, produced by heat and sweating. Now the description of these varieties of miliaria will naturally come when I am speaking of the etiology of eczema; and, therefore, my principal object at present is to define accurately the remaining variety, the *M. crystallina*, the miliaria *par excellence*, and to give the marks by which it may be distinguished from all similar eruptions.

There is no vesicular affection in which the resemblance of the vesicles to drops of dew is so marked as in miliaria, and the fluid which they contain never becomes yellow and puriform, nor dries into yellow or brown crusts. In fact, these vesicles are liable to but slight changes. They do not coalesce with one another, but always remain isolated; they are not arranged in groups; their base is never reddened; and they are never surrounded by a red border or areola. Again, parts which have been occupied by this affection are not subsequently liable to be again attacked by them. Lastly, miliaria is not attended with any subjective sensations of itching or tingling; indeed, no abnormal feelings exist to draw the patient's attention to the presence of the eruption.

These peculiarities of the vesicles of miliaria, and the constant existence of some other morbid condition which, in the present perfect condition of our means of diagnosis, can generally be readily determined, render it by no means difficult to diagnose this affection. If the characters I have laid down be borne in mind, it will be scarcely possible to confound miliaria with eczema, herpes, varicella, or the sudamina proper.

Prognosis.—As this eruption is always a concomitant of some general disease, or (according to the view which I have put forth) of a pyæmic condition, it becomes, in reference to prognosis, an important question whether the general disease is relieved or aggravated by the breaking out of a miliaria, and whether its occurrence should lead us to give a favorable or an unfavorable prognosis. Now, experience shows that this vesicular affection may present itself when recovery is setting in, and that it also appears in cases which terminate fatally. So far as I know, indeed, no statistical data are in existence from which one could determine the relative frequency of death and of recovery in typhus, puerperal fever, &c., when attended with miliaria. But in my own experience and in that of my colleagues, the number of those who have recovered from typhus, and in whom this eruption has been present, has been about the same as that of those who have died. There certainly is no abatement of the symptoms when the miliaria breaks out; but there is also no aggravation of them; and in the Vienna school of medicine, no prognostic signification of any kind, whether favorable or the reverse, is attached to the occurrence of this affection.

It is, in fact, perfectly inexplicable that medical men, as well as the public generally, should have a dread of this eruption, and particularly of its supposed fugacity, and its imaginary tendency to recede and give rise to metastasis. For, if there is any one eruption which remains visible and unchanged after death, it is this. Other cutaneous diseases can be detected in the dead body only when some of their results (such as pustules, crusts, or hæmorrhagic spots) are present, for mere reddening of the skin and slight exudative affections disappear even before death. But the vesicles of miliaria present the same appearance in the dead body as during life. They are most easily detected on the sides of the chest, and on the skin of the axilla. Yet it is a common popular remark, and there are many text-books in which it is still laid down, that the recession of this rash is, in certain cases, the cause of sudden death. I have already, when describing the Anæmiæ of the Skin,[1] expressed my opinion with regard to the appearances supposed to be due to the recession of various diseases, and have shown that they are generally the result of an anæmic state of the cutaneous blood-vessels. But in miliaria no hyperæmia at any time exists, fluid merely being collected in drops beneath the epidermis. Hence it is easy to understand that the vesicles remain visible even in the dead body. To me, then, a metastasis of this eruption to the internal organs is a thing altogether unknown. In fact, I regard it as being itself due to the formation of metastatic deposits in the skin.

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[1] Vide p. 70.

Treatment.—I have shown that miliaria is a subordinate affection, which accompanies other diseases without in any way modifying their course, is itself liable to no metamorphosis of any kind, and always terminates within a short time; and thus I have already indicated the principle on which I would have it treated, and which I may express in a single word, as being one of "expectation." I am the more confirmed in this opinion, because miliaria gives rise to no pain which might demand for this affection a special treatment.

Thus, I neither desire to *bring out* this eruption, since experience shows that it in no respect relieves the other symptoms from which the patient may suffer; nor do I, following the example of Schönlein and his school, think of *fixing* it, for I do not dread its disappearance or its supposed tendency to recede. In fact, so far as therapeutics are concerned, I altogether ignore the existence of miliaria. I treat the patient on account of his other symptoms exactly as if it were absent. In particular, I may mention that when the primary disease (as, for example, an attack of acute rheumatism) demands the application of cold lotions, or even of bags of ice, I should not allow the presence of this eruption to prevent my employing them. For, in the Wards of Professor Skoda, I have repeatedly had occasion to observe that applying ice-bags for days together over the joints, or even to the cardiac region, does not interfere with the formation of the vesicles of miliaria, which are under these circumstances just as fully developed as in cases in which warm poultices are employed; nor have I seen patients derive any injury from the application of cold.

I must urgently protest against the employment in this affection of any local irritants, including even the warm lotions recommended by Schönlein, consisting of half an ounce or an ounce of caustic potass dissolved in eight or ten ounces of water. For although a miliaria cannot be brought out by such applications, I am sure that cutaneous irritants, and particularly such strong solutions of potass, may give rise to an artificial eczema; and this at least has the disadvantage of burdening the patient (who has already enough to bear in the primary disease from which he suffers) with a new skin affection, attended with itching; whereas the miliaria alone would not in any way trouble him.

III. PEMPHIGUS ACUTUS SEU FEBRILIS. (*Blasenfieber.*)

We frequently read in works upon diseases of the skin, as well as in the medical journals, descriptions of an affection termed *Pemphigus acutus,* which is said to pass through regular stages (*Stadia prodromorum, eruptionis, floritionis, decrustationis*) like the exanthemata, to terminate within four weeks at latest, and to have no tendency to relapse. Now I have never been so fortunate as to meet with a pemphigus presenting these characters; and I base this statement not only on the patients under my own care (of whom the number now exceeds 80,000), but also on the experience of all my colleagues in this city, whether in the General Hospital or in the other institutions for the sick. This, for a period of more than twenty years, represents such an enormous number of patients, that one may estimate them at about a million. Now among these cases no single instance of an acute typical pemphigus running its course after the manner of the exanthemata has as yet presented itself. I do not mean to affirm, that *one or two* bullæ may not now and then develope themselves, and, after remaining a short time, disappear without being followed by others. This may be observed either in persons previously healthy (although it is a rare affection, unless caused by some local irritant), or in patients suffering from febrile diseases, and particularly those due to blood-poisoning, such as puerperal fever, continued fever, variola, &c. In such maladies, the formation of a few scattered bullæ may occur as a result of metastasis. But to warrant us in making use of the word pemphigus, there ought to be something more than an ephemeral bulla. In this, as in all other cases of diagnosis, we have to distinguish between symptoms and diseases, between the import of a single bulla and that of several. In all questions of this kind, our conclusions must be based upon the course of the complaint, and the way in which its symptoms succeed one another. No one would think of saying that variola was present because there were two pustules at some part or other of the surface, or of declaring a patient to have cholera because he had been purged and had vomited once or twice. Nor have we any greater right to assert that a case is one of pemphigus, because a single bleb is present. I cannot admit the validity of such a diagnosis, unless the case really answers to the description which has been given by writers upon this disease.

The causes which have led to the idea that there is an acute exanthematic pemphigus are probably the following:

1. The ephemeral bullæ which make their appearance in various other diseases, such as variola, have been ascribed to a *Pemphigus acutus*.

2. The *Varicella bullosa*, and those forms of herpes (particularly the *H. Iris*) in which the vesicles frequently pass into bullæ, have been regarded as belonging to pemphigus.

3. The different eruptions of bullæ which characterise chronic pemphigus, and each of which is often of no very long duration, have been mistaken for instances of an acute form of the disease. When describing chronic pemphigus, I shall treat of this point at greater length.

4. Urticaria, not only in its acute, but even in its chronic form, sometimes presents the peculiarity that, instead of wheals, bullæ are formed at certain spots. But no one need be astonished at this exceptional occurrence who bears in mind that wheals themselves result from the pouring out of serum, and that an increase in the quantity of fluid is all that is necessary to raise the cuticle over a wheal and to form a bleb. That this was known even to the older writers, is proved by the expressions, "*Urticaria vesiculosa, U. bullosa,*" which we find in medical literature.

5. Erysipelas is well known to be sometimes attended with the formation of bullæ of various sizes, which are, however, confined to the original seat of the disease, never spreading to the adjacent uninflamed parts of the skin. The name *Erysipelas vesiculosum et bullosum* has long been used to designate this form of the affection.

6. Lastly, infants are liable to a cutaneous affection in which bullæ are formed, and which, like every other infantile disease, runs a much more rapid course, than in adults. That such cases have not been regarded as instances of chronic pemphigus has been merely because duration alone is looked on as determining whether a complaint is acute or chronic. But surely no one will assert, that

because the *Pemphigus syphiliticus neonatorum* terminates very rapidly by the death of the child affected with it, the affection is therefore a *P. acutus;* and what I say of this syphilitic disease is true also of all the other bullous eruptions to which children are liable, and which have been spoken of by medical writers under the name of *Rupia escharotica*, or *Pædophlyctis.*

I think, then, that I am justified in adhering to the opinion stated above, and that doubts may fairly be entertained as to the existence of a *Pemphigus acutus* (*Febris pemphigosa, bullosa, ampullosa, Epinyctis, Therminthus*, &c.).

I would advise those who may wish to refer to books upon this point to consult not only the well-known dermatological treatises of *Willan, Bateman, E. Wilson, S. Plumbe, Alibert, Cazenave et Schedel, Rayer, Fuchs, J. Frank* (Band i, p. 137), *Devergie, Gibert, Duchesne-Duparc*, &c., but also the following special works: 'Ideen zur Diagnostik,' von *J. E. Wichmann*, Hanover, 1794 (Band i, p. 82); 'Versuch über den Pemphigus und das Blasenfieber,' von *C. G. C. Braune*, Leipzig, 1795; 'Monographie du Pemphigus, ou Traité de la Maladie vésiculaire,' par *Gilibert*, Paris, 1813; 'Annales des Maladies de la Peau et de la Syphilis, publiées par *A. Cazenave*, vol. iv, Mars, 1852, p. 141; 'Ueber die Unzulänglichkeit der bisherigen Pemphigus-Diagnose,' von *Dr. A. Lafaurie*, Würzburg, 1856. In the last-mentioned work the reader will find, at page 12, a detailed account of the literature of this subject.

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